OPTIMISING WORKPLACE EFFICIENCY WITH PHYSICAL ACTIVITY INTERVENTION

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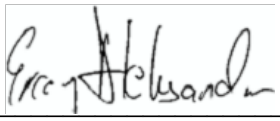
APPROVED BY 

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Dedication

“To all of you who are still waiting for the right motivation.

It's inside you, your potential and ability to make a difference.”

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Special thanks go to my son, whose sleepless nights made this possible. You brought joy and perspective to my life in ways only you could create.

I hope that this achievement and knowledge gained will contribute to making the world a healthier and happier place, for you.

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ABSTRACT

This research explored the relationship between physical activity, employee empowerment, and business productivity in the workplace. Productivity can be measured across various dimensions such as absenteeism, presenteeism, employee morale, or return on investment, but the presence of an employee doesn't equal a productive one.

Considering factors like increased life expectancy and the intricacies that COVID-19 brings along, this study explored the significance of physical activity in enhancing motivation, especially intrinsic, as a main contributor to the overall well-being of employees, company performance, and health sustainability.

Through an extensive theoretical framework based on psychology, kinesiology, and neuroscience of movement this research explains habit formation due to precisely chosen exercise and highlights the potential benefits of education and motivation in developing independence in being physically active. It explained the importance of improving health self-care awareness and emphasized prevention over treatment.

Except individual framework of research, this study discussed societal and environmental implications of a sedentary lifestyle arguing for the workplace as an ideal setting for health risk assessment and health promotion activities.

For this research mixed-methods design was used, which combines both quantitative and qualitative data collection methods. Through tailored functional movement exercise programs, walking sessions, and education about body movement, this study aims to explain that awakening and strengthening of inborn movement patterns could boost our cognitive functions such as creativity, concentration, focus, and memory and as such, impact employees' performance and productivity.

The significance of the research lies in its potential to deliver evidence-based interventions for improving employees' health and overall well-being through physical activity, enhance employees' empowerment for higher organizational performance, and impact sustainability by reducing unnecessary healthcare costs related to non-communicable diseases.

Additionally, this study underscored the role of healthcare professionals, particularly physiotherapists, in promoting movement as a means of preventive healthcare and sustainable workforce management. Ultimately, this research contributed to the development of integrated solutions for fostering a healthier and more productive workforce, with implications at both, local and global levels.

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CHAPTER I:

INTRODUCTION

1.1 Overview

This doctoral thesis explored employee empowerment and business productivity and its relationship with being physically active.

According to the literature, there are various definitions and applications of productivity depending on business or industry. Also, there are different measures of productivity, but the choice between them depends either on the purpose of the productivity measurement and/or data availability. The most common are measuring the total cost of the workforce, absenteeism/presenteeism, company culture, employee morale, employee utilization, input/output, and return on investment.

On an organizational level, productivity is considered a key source of economic growth and competitiveness and, as such, is basic statistical information for many international comparisons and company performance assessments (OECD Productivity Manual).

On an individual level, the relationship between employee personal growth and development is closely related to the growth and improvement of the company. By research it is something called regenerative work; i.e., sustainable work systems where the growth of individuals is happening through their work and organization (Augustinsson, Ericsson & Pettersson 2012).

Productive companies have increased profitability and efficiency, competitive advantage, higher employee engagement and satisfaction, improved work-life balance of employees, and enhanced customer satisfaction, they facilitate innovation and creativity among the workforce.

Various businesses are using different measures for productivity enhancement such as improving communication, investing in employees' education and training, technology and automation support, recognition and rewards of employees, offering better working conditions, fostering a positive work culture, optimizing workflow processes, and many more, offering wellness programs within or outside the companies, fostering work health promotion activities.

Employee health practices refer to initiatives aimed at preventing and treating employee health risks and problems; health screenings, stress management training, and employee assistance programs (Grawitch et al., 2007). Healthier employees are, in general, more resilient and better able to cope with the changes, uncertainty, and ambiguity which are now more common in modern organizations (Business in the Community 2009).

Physical activity is one such measure that impacts physical and mental health and as such enhances employee performance and productivity, while the workplace has been described as an ideal setting for exercise promotion and many recognize its associated public health potential (Dishman et al.1998; Ewles & Simnett 2003) since they already need to ensure a safe and healthy environment and have an opportunity to assess the health risks of a greater number of people in one place.

Scientific evidence of the multiple health benefits of regular physical activity across the lifespan has been documented over the last five decades (World Health Organization 2002, 2010, 2013, 2014). Despite such mounting evidence, in 2016 the World Health Organization (WHO) estimated that the global prevalence of physical inactivity among adults was 27.5%. In 2016, more than one in three (35.4 percent) adults in the 27 EU Member States were insufficiently active, according to the WHO dataset. This varied from 19 percent in Finland to 46 percent in Portugal.

Therefore, this research investigated employee productivity and how physical activity impacts the behavioral change of an individual and the adoption of healthy habits and lifestyle behavior. The study explored how the power of movement could influence cognitive functions such as creativity, employee engagement and empowerment, personal growth and learning capacity, and self-motivation, including extrinsic and intrinsic ones, which consequently leads to an increased level of productivity, self-efficacy, and empowerment.

Life expectancy has increased which means that employees must have work that is consistently safe from known hazards and also is an experience that can help to foster things that we need as humans, such as stability, inclusion, connection, and respect (Ahonen et al., 2022).

In addition to its obvious role as a source of income, work can provide benefits to employees, in terms of its important aspect in defining an individual's identity, self-esteem, and psychological well-being (Warr, 1987). In fact, for many individuals, work can be considered the central defining feature of one's life (Quick et al., 1992).

Reduced health and physical inactivity are decreasing sustainability levels in our society due to high usage of fuel transportation instead of being physically active, and increased healthcare costs due to unnecessary usage of healthcare services produced by a sedentary lifestyle.

The journey of this study went from employee empowerment to engagement, increased level of motivation to high performance and productivity underpinning by the neuroscience of movement and improvement that exercise puts on brain functioning (Cotman, Berchtold & Christie 2007).

Even though many researchers have written about this topic, some crucial data is missing. There is not enough information on job satisfaction, employee empowerment,

psychological capital, present fitness and health status, pain/issues if present, comorbidity, motivation for doing exercise, and work motivation. Also, there is not enough data about how learning through experience could foster and improve motivation and long-term healthy behavior due to independence achieved through knowledge gained.

Many research studies also focus only on on-site activities but there is a need to consider online intervention programs due to the digitalization era in which we are living, and the transformation that it brings along. The remote job settings and time constraints due to private and professional responsibilities are barriers to on-site workplace health promotion activities and therefore this program was delivered in an online form.

Also, this research provided missing information about improving the fitness level in a specific way, by using functional moving patterns in combination with walking or running, individually created depending on the present health status of participants and education about smart and safe exercise.

By precisely chosen functional movements and specific training which is a compound of neurodevelopmental kinesiology of new-born, contralateral movements, rocking and rolling patterns, facilitation of proprioception and coordination, at least two walking sessions weekly, and education of body and movement, this study aims to awaken and strengthen of inborn movement patterns to boost cognitive functions such as creativity, concentration, focus and memory.

When achieving improvement in the functioning of the body and mind, it is easier to become and stay intrinsically motivated to keep those habits and fitness levels in the long term, especially when people are educated about why they are doing so. Those effects of increased self-empowerment and self-efficacy could be transferred to the

workplace settings since changes in behavior and attitude are part of one's character and it is not possible to separate those changes between private and professional life.

The neuroscience of fitness, a fascinating intersection of physical activity and brain health, is a rapidly developing area of research. This field explores the profound effects of regular exercise on our brain and nervous system, revealing significant implications for our overall health and quality of life.

Exercise stimulates neurogenesis, the creation of new neurons, primarily in the hippocampus, influencing memory and learning while increasing key mood-regulating neurotransmitters, including serotonin, dopamine, and norepinephrine. These chemicals play an essential role in mood regulation, mental alertness, and focus, potentially explaining why physical activity is often associated with reduced symptoms of depression and anxiety. It also enhances brain plasticity, essential for recovery from injury and aging, and improves cognitive functions such as attention and memory.

This study shifted the idea of workplace health to understanding overall health and lifestyle in general to develop a long-term impact. That is important especially at the beginning of habit formation considering that time and effort are the key sources one needs to have.

To achieve that, this research tried to cover as much of the missing data as possible, to get even more comprehensive insights in the area of workplace health promotion activities and deliver the best possible solution for creating a healthier and happier workforce.

This research was guided by many neuroscientific studies including behavioral change, habit formation, education theories, neuroendocrinology studies, physiology and movement science, positive psychology theories, and salutogenic approach.

Program interventions were created by the AMSO Behavioral change method, presented by Dr. Michael O'Donnell (Awareness, Motivation, Skills, Opportunity) for characterizing and designing behavior change interventions related to physical activity and healthy lifestyle.

For this research, a mixed-methods research design was used, which combines both quantitative and qualitative data collection methods. The study involved an intervention group that received an individual-level physical activity intervention program, which was tailored to their specific needs and goals.

To collect data, predetermined questionnaires were used as the primary data collection method, which was done at the beginning and the end of the research.

They were asked to complete questionnaires at the beginning of the study and at the end of the study (i.e., after two months). These questionnaires included questions about their physical activity/fitness and health status, motivation for doing sport, job satisfaction and overall motivation, eventual pain issues, comorbidity, psychological capital, and empowerment data collection. Those characteristics are key elements for improving creativity, learning capacity, employee engagement, motivation, and performance.

In addition to questionnaires, semi-structured interviews were conducted with a subset of participants from the intervention group. These interviews provided more detailed insights into their experiences with the physical activity intervention program, including their motivations for participating, challenges they faced, and perceived benefits of the program.

During the study, the weekly surveys were sent at the end of each week to complete the data and generate insights for analysis. The researcher worked with participants on an individual level and contacted them daily, had meetings, and kept track

of their activity to ensure they were doing given tasks properly. Education was delivered on a group and individual level, based on personal needs and goal setting.

To analyze the data, a combination of quantitative and qualitative methods was used. The quantitative data collected from the surveys and questionnaires were analyzed using statistical methods such as the Wilcoxon test for dependent causes and Man Whitney and Kruskal Wallis. The qualitative data collected from the interviews were analyzed using thematic analysis.

Overall, this mixed-methods research design gained a comprehensive understanding of the impact of physical activity empowerment on employee productivity, while also providing detailed insights into the experiences of the participants in the intervention group.

To summarize, the idea was to promote, adopt, and sustain increased levels of physical activity and overall health and well-being in the context of the workplace setting, with the purpose of increased job satisfaction, motivation, higher engagement and empowerment, increased level of creativity, learning capacity, intrinsic motivation, and better overall health status. This study explained a journey to decreased healthcare costs, increased sustainability, workforce long-term retention, the competitive advantage of an enterprise, and increased level of employee performance and productivity.

1.2 Research Problem

Productivity isn't everything, but in the long run, it is almost everything. A country's ability to improve its standard of living over time depends almost entirely on its ability to raise its output per year. Finding the most effective solution for productivity increase is not an easy task, but physical activity is one of the main contributors to more engaged and productive employees.

In recent years, there has been growing recognition of the importance of addressing physical inactivity in the workplace to promote employee health and well-being, as well as organizational success and a pathway to competitive advantage. Numerous studies have suggested that physical activity empowerment among employees can lead to increased productivity, improved job satisfaction, and reduced absenteeism, higher affective commitment and engagement.

Through many theoretical frameworks and practical guidance healthy and sustainable working life became a point of interest for various professionals especially in this changing and developing fast-moving world due to productivity and performance demands. Work-life balance has consequences on peoples' private and professional lives not to mention COVID-19 disruption in the workplace settings.

The intricacies of modern societies unimaginably change peoples' lifestyles but the price of that progress has a high impact on people's well-being and overall health. A sedentary lifestyle, including not just a job position but leisure time, physical inactivity, and lack of motivation for it, has decreased health and increased unnecessary healthcare costs. Not only people are affected, but the whole environment

Physical inactivity is a major health concern that affects individuals worldwide. According to WHO (World Health Organization), physical activity is any bodily movement produced by skeletal muscles that requires energy expenditure. It has significant health benefits for the heart, body, and mind and contributes to preventing and managing diseases such as cardiovascular diseases, and several types of cancers (breast, colon, colorectal, endometrial, and epithelial ovarian cancer and diabetes (Patterson et al, 2018). It can reduce symptoms of depression and anxiety, enhance thinking, and learning, and improve overall health in the areas of all-cause mortality, neurocognitive health,

metabolic health, musculoskeletal health, cardiovascular health, and improve quality of life.

The World Health Organization (WHO) defines the concept of "health" as a complete state of physical, mental, and social well-being and not merely the absence of disease (Burton, 2010) but it is also important to explain health as a dynamic state of well-being characterized by physical and mental potential, which satisfies the demands of life commensurate with age, culture, and personal responsibility (Bircher, 2005).

The level of inadequate physical activity according to WHO hasn't changed positively since 2001, and therefore this study aims to investigate eventual measures that could address the problem itself and find a solution to solve it.

Increased levels of physical inactivity have negative impacts not just on the health system, yet the environment, economic development, community well-being, and quality of life. In addition, it can also have negative consequences for work performance and productivity, particularly in sedentary occupations.

Investment in "good work" to foster employee health, well-being, and resilience is critical not only to support individual health and well-being but to relieve the burden of ill health on economies.

There are many types of research on this topic already that show a positive relationship between being physically active and an increase in productivity and there are some studies that go against it. However, there are no studies that focus on each employee individually to work with them throughout the research period.

Also, there is no information about job satisfaction, empowerment, psychological capital, present level of physical activity, motivation for being physically active, pain issues if present, comorbidity, and information about intrinsic and extrinsic motivation.

Most of the researchers measure productivity by presenteeism/absenteeism which is not proportionally, i.e., being present does not equal productivity.

Therefore, this study measured changes in motivation, especially intrinsic ones, which originated from exercising. The experimental research investigated whether the power of movement could influence the development of intrinsic motivation which is described as self-motivated and self-determined, driven by interest and enjoyment. Those are the key factors that increase employee engagement, creativity, learning capacity, and performance, productivity. However, despite the growing body of research on this topic, there is still a need for more in-depth, individual-level studies that can examine the potential impact of physical activity on employee productivity and empowerment.

This study investigated how introducing individually compound physical activity measures among employees can enhance business productivity. Specifically, a group of employees participated in a physical activity intervention program designed to promote their physical activity levels and productivity. The initial results before the intervention are taken would be compared with the results after the intervention program is finished.

This study provided new insights into the potential benefits of physical activity empowerment in the workplace and contributed to the development of evidence-based interventions that can help organizations promote healthier and more productive work environments since healthy and active people are also more creative and creativity is crucial for future growth and innovation.

1.3 Research questions and objectives

Physical activity empowerment among employees has been found to have positive effects on productivity in the workplace. However, the existing literature on this topic has mainly focused on group-level studies, with limited research exploring the potential

benefits of individual-level physical activity interventions in the workplace. Therefore, this study aims to investigate the impact of physical activity empowerment on productivity among employees on an individual level.

The research question for this study is:

- How does physical activity empowerment among employees enhance business productivity? The study inclines the question, What is the impact of exercise on intrinsic motivation, the key factor that leads to productivity?

To answer this question, the following research objectives are identified:

- To determine the impact of a physical activity intervention program on the physical activity levels of employees.

- To investigate the relationship between increased physical activity levels and productivity among employees,

-To investigate the influence of exercise on intrinsic motivation level

- To examine the impact of individual-level physical activity interventions on employee empowerment.

- To examine the impact of measures taken on the possibility of adopting a new habit

-To measure the impact of online interventions on the physical activity level

- To examine the impact of functional movement on pain decrease

By addressing these research objectives, this study provided a more detailed understanding of the potential benefits of physical activity empowerment among employees and identified effective strategies for promoting physical activity in the workplace. Ultimately, the main goal of this research is to contribute to the development of evidence-based interventions that can help organizations improve employee health,

well-being, and productivity. Also, this study could point out the importance of increased health self-care awareness to promote sustainable healthcare solutions.

1.4 Significance of the Study

This study investigated the impact of physical activity empowerment among employees on business productivity through a physical activity intervention program and as such it has its importance in the academic community and the business world.

Research suggests that health promotion may be able to reduce employee health risks, and reduce costs of unhealthy employees, proving to provide a good return on investment (Bertere, 1990; Mills et al., 2007).

The belief that productivity can influence both, employee and organizational performance, as well as an organization's ability to maintain a competitive advantage over other businesses, has sparked a surge of interest in the subject among academics throughout the world (Balwant, Mohammed & Singh 2022).

Supposing that empowerment is a driver for employee engagement and physical activity is the tool for enhancing intrinsic motivation, this research sheds even more light on the importance of being physically active.

Employee productivity has not only been a matter of substantial interest to management experts (Singh, Solkhe & Gautam 2020), yet become a major matter for public health institutions because physical inactivity is the main contributor to non-communicable diseases such as coronary heart disease, type 2 diabetes, breast and colon cancers, and shorten life expectancy. Non-communicable diseases (NCDs) kill 41 million people each year worldwide, equivalent to 71% of all deaths globally (PWHO, Pan-American World Health Organization).

The OECD estimates that increasing physical activity can save purchasing power parity of €7.7 billion per year in healthcare expenditures if everyone were to do at least 150 minutes of physical activity per week. The WHO and OECD report found that if everyone were to meet the WHO's recommended level of 150 minutes of moderate-intensity physical activity per week, it would prevent more than 10,000 premature (people aged 30 to 70 years) deaths per year and increase the life expectancy of people who are now insufficiently active by 7.5 months and that of the total population by nearly 2 months.

The significance of this study surely exists, not just locally, but globally. An adequate measure needs to be found to create solutions for a sustainable workforce, workplaces, and society in general. Even though this thesis explains almost only one part of promoting and preventing health in a workplace setting, this research could contribute to developing new integrated solutions for adopting an increased level of physical activity in the long term, not just in a workplace setting for sustainable healthcare solution, healthier population, and more successful enterprises and society.

CHAPTER II:

REVIEW OF LITERATURE

2.1 Introduction

This literature review aims to provide a comprehensive overview of the existing research on the relationship between physical activity and productivity in the workplace. It begins by discussing the theoretical framework that underpins this relationship, key concepts, models, and positive psychology theories, and will then review the empirical studies that have investigated the impact of physical activity on productivity.

In addition to reviewing the literature on physical activity and productivity, this literature review also explored the concept of empowerment and its relationship with productivity. This is particularly relevant to the proposed study, which aims to investigate the impact of physical activity empowerment on employee productivity.

The literature review concluded by summarizing the key findings and themes from the existing research, identifying the gaps in the literature, and explaining how this study will address these gaps. Finally, hypotheses were formulated based on the review of the literature, and the expected outcomes of the proposed study are discussed in light of the existing literature.

This literature review is an important component of the proposed study, as it provides a critical examination of the existing research on the relationship between physical activity and productivity in the workplace. It is essential to review the existing literature to identify the gaps in the knowledge base and to inform the development of the research questions and hypotheses for the proposed study.

The importance of investigating the relationship between physical activity and productivity is well established. Studies have shown that physically active employees are more productive, have higher job satisfaction, and experience less stress and fatigue than

their sedentary counterparts. In addition, physically active employees are less likely to be absent from work due to illness or injury. Given these findings, there is a growing interest among organizations in promoting physical activity among their employees as a means of enhancing productivity and reducing healthcare costs.

However, despite the growing interest in this area, there is still a need for more research that examines the relationship between physical activity and productivity, particularly at the individual level. Most of the existing research has focused on the organizational level, and there is a need for more studies that examine the impact of physical activity on individual employee productivity. Furthermore, there is a need for more research that investigates the impact of physical activity empowerment on employee productivity, as this is an emerging area of research that has not been extensively studied.

Overall, a critical examination of the existing literature is essential to identify the gaps in the knowledge base and to inform the development of the proposed study. This literature review provided a comprehensive overview of the existing research on physical activity and productivity and identified the gaps in the literature that the proposed study aims to address.

2.2 Theoretical framework

Several key concepts and theories have been used to study the relationship between physical activity and productivity in the workplace. These include:

2.2.1. Biopsychosocial model of health

The theoretical framework, that underpins the relationship between physical activity and productivity is rooted in the biopsychosocial model of health, first

conceptualized by George Engel in 1977, which recognizes the complex interplay between biological, psychological, and social factors in determining health outcomes. According to this model, physical activity can impact productivity through its effects on these three factors.

Biologically, physical activity has been shown to improve cardiovascular health, reduce the risk of chronic diseases such as obesity and diabetes, cardiovascular diseases, and some forms of cancer, and improve cognitive functioning. These physical health benefits can lead to increased energy, reduced fatigue, and improved mental clarity, all of which are important factors in enhancing productivity.

Psychologically, physical activity has been shown to reduce stress and anxiety, improve mood, and enhance self-esteem. These psychological benefits can also contribute to increased productivity, as employees who are less stressed and in a better mood are more likely to be engaged and motivated at work.

Socially, physical activity can improve social connections and support, which can in turn improve job satisfaction and reduce turnover. In addition, physical activity interventions within and outside of workplace settings can create a sense of community and camaraderie among employees, which can enhance team dynamics and productivity.

2.2.2. Self-determination theory (SDT)

SDT is a theory of motivation and personality that proposes that individuals have three basic psychological needs: autonomy, competence, and relatedness. According to this theory, when individuals engage in physical activity that they perceive as autonomous, enjoyable, and challenging, they are more likely to be intrinsically motivated to continue engaging in physical activity, which can lead to improved productivity.

It toppled the dominant belief that the best way to get human beings to perform tasks is to reinforce their behavior with rewards. Formally, it comprises six mini theories, where each one of which explains motivation or personal functioning. These are Cognitive evaluation theory (CET), Organismic Integration Theory (OIT), Casualty Orientations theory (COT), Basic Psychological Needs Theory (BPNT), Goal Contents Theory (GCT), and Relationship Motivation Theory (RMT).

On an individual level, a key point of the decision of whether to be physically active is motivation. The self-determination theory by Ryan and Deci (2000) divides motivation into controlled and autonomous aspects. In the field of physical activity, the autonomous aspect of motivation refers to the intention of joy, well-being, and achievement of personal goals derived from physical activity, while the controlled aspect refers to the influence and the pressure of others, as well as the guilt of not exercising (Ryan & Deci 2000).

Self-determination theory proposes the importance of the motivational factors originating from oneself, rather than external factors, in the determination between physically active or physically inactive lifestyles. Strong intrinsic motivation is associated with positive long-term effects of physical activity, as intrinsically motivated individuals continue being active even when the influence of external pressure has stopped (Ryan & Deci 2000; Teixeira et al., 2012). Thus, to achieve permanent positive change in one's physical activity habits, it is crucial to enhance the intrinsic motivation aspect.

Motivation is an integral part of human experience. From infancy and childhood to adulthood it is in our nature to explore new things, even in the absence of extrinsic reinforcers. Intrinsic motivation refers to people's spontaneous tendencies to be curious,

to seek out challenges, and to exercise and develop their skills and knowledge, even in the absence of operationally separable rewards.

Novelty-seeking was suggested to energize approach behavior via curiosity and exploration that leads to skill mastery, information attainment, or learning (Kaplan & Oudeyer, 2007). Interest and enjoyment in activity might boost intrinsic motivation by engendering ‘flow’, a prolonged state of focus and enjoyment during task engagement that stretches one's skillset (Csikszentmihalyi, 1975; Nakamura & Csikszentmihalyi, 2009).

Over the past four decades, experimental and field research guided by self-determination theory (Ryan & Deci, 2017) has found intrinsic motivation to predict enhanced learning, performance, creativity, optimal development, and psychological wellness. Intrinsic motivation refers to the spontaneous tendency “to seek out novelty and challenges, to extend and exercise one’s capacity, to explore, and to learn” (Ryan & Deci, 2000).

When intrinsically motivated, people engage in an activity because they find it interesting and inherently satisfying. By contrast, when extrinsically motivated, people engage in an activity to obtain some instrumentally separable consequence, such as the attainment of a reward, the avoidance of punishment, or the achievement of some valued outcome.

2.2.3. Job demands-resources model (JD-R model)

The JD-R model is a framework that proposes that job demands and job resources impact employee well-being and job performance. The JD-R model classifies job characteristics into two categories. Job resources are positively valued physical, social, or

organizational aspects of the job that are functional in achieving work goals, reducing job demands, or stimulating personal growth and development (Schaufeli & Taris, 2014).

Job demands are negatively valued physical, social, or organizational aspects of the job that require sustained physical or psychological effort and are therefore associated with certain physiological and psychological costs. The JD-R model describes two distinct processes (Bakker & Demerouti, 2007; 2017): a positive, motivational process and a negative, health-impairing process.

This model of burnout and engagement (Bakker & Demerouti, 2007) explains how increasing demands cause individuals to exert energy in response to the hindrances in their work environment. Such efforts ultimately result in a depletion of energy and burnout. Exposure to job resources, in contrast, encourages motivation processes in individuals because they feel they can meet the demands with which they are faced.

Physical activity can be considered a job resource, as it can provide employees with the energy, motivation, and cognitive functioning needed to perform their job demands.

Workers are consequently more likely to invest in their work and be engaged (Bakker & Demerouti, 2007).

This model can be tied to rewards and recognition because these characteristics can be viewed as a form of feedback (Mone et al., 2011), which, as noted, has been viewed as a job resource. This feedback helps ensure individuals are aware of their strengths and weaknesses, and it promotes motivational processes associated with employee engagement (Mone et al., 2011). There is much empirical support for these two processes and their impact on burnout and engagement, as well as on organizational outcomes (Van den Broeck et al., 2013).

2.2.4. Social cognitive theory (SCT)

SCT is an intrapersonal-level theory developed by Albert Bandura that emphasizes the role of social and cognitive factors in shaping behavior. According to this theory, individuals learn by observing others and by receiving feedback on their behavior. The theory describes the influence of individual experiences, the actions of others, and environmental factors on individual health behaviors.

Key components of SCT related to individual behavior change include self-efficacy, the belief that an individual has control over and can execute a behavior; behavior capability, determining the outcomes of behavioral change; expectancies, assigning a value to the outcomes of behavior change and self-control, regulating and monitoring individual behavior, observational learning, watching and observing outcomes of others performing or modeling the desired behavior, reinforcements, promoting incentives and rewards that encourage behavior change.

Physical activity interventions in the workplace can leverage the principles of SCT by providing opportunities for social support, modeling of physical activity behavior, and feedback on physical activity performance.

2.2.5. Health belief model (HBM)

The HBM is a model, developed in the 1950s by social psychologists Leventhal, Kegeles, Hochbaum, and Rosenstock. It proposes that individuals are more likely to engage in health behaviors if they perceive themselves to be susceptible to a health problem or the health problem to be severe if they perceive the benefits of the health behavior to outweigh the costs, and if they perceive themselves to be capable of performing the health behavior. Six components of HBM are perceived severity, perceived susceptibility, perceived benefits, perceived barriers, cues to action, and self-

efficacy and they explain the relation with adopting the healthy habit. Physical activity interventions in the workplace can leverage the principles of the HBM by promoting awareness of the health benefits of physical activity, addressing barriers to physical activity, and building self-efficacy for physical activity.

Overall, these key concepts and theories provide a theoretical framework for understanding the relationship between physical activity and productivity in the workplace. By examining the role of motivation, job demands and resources, social and cognitive factors, and health beliefs, researchers can gain a better understanding of the mechanisms through which physical activity impacts productivity.

2.2.6. The psychology of forming a habit

Our habits govern our lives. If chosen right they could positively impact our health. Within psychology, habits are defined as actions that are triggered automatically in response to contextual cues that have been associated with their performance (Neal et al., 2012, Wood & Neal, 2007).

The habit formation attempt begins at the 'initiation phase', during which the new behavior and the context in which it will be done are selected, which requires a sufficient amount of motivation. Automaticity develops in the subsequent 'learning phase', during which the behavior is repeated in the chosen context to strengthen the context-behavior association. Habit-formation culminates in the 'stability phase', at which the habit has formed and its strength has plateaued so that it persists over time with minimal effort or deliberation (Garner, Lally & Wardle, 2012).

Habits are cognitively efficient because the automation of common actions frees mental resources for other tasks. According to research, approximately 45% of everyday

behaviors tended to be repeated in the same location almost every day (Wood, Quinn, & Kashy, 2002).

Making healthy behavior a habit it's not easy and it differs from person to person. According to Lally et al. (2010), daily ratings of the subjective automaticity of the behavior showed an asymptotic increase, with an initial acceleration that slowed to a plateau after an average of 66 days. Keller et al. (2021) argued that it took a median of 59 days for participants to successfully form habits to reach peak automaticity.

Decades of psychological research consistently show that more repetition of a simple action in a consistent context leads, through associative learning, to the action being activated upon subsequent exposure to those contextual cues (Bayley et al., 2005; Hull, 1943; Lally et al., 2010) Once initiation of the action is 'transferred' to external cues, dependence on conscious attention or motivational processes is reduced. (Lally, Wardle & Gardner, 2011). Therefore, habits are likely to persist even after conscious motivation or interest dissipates (Gardner, Brujin & Lally,2011).

When automaticity is developed: behaviors become 'second nature', worming their way into your brain so that participants feel quite strange if they do not do them (Lally, Wardle & Gardner, 2011). Behavior change achievements, however small, can increase self-efficacy, which can in turn stimulate the pursuit of further changes (Bandura, 2001). Change is naturally more difficult as we age, but it's beneficial to our cognitive health to stimulate and encourage it.

2.2.7. The role of muscle memory in preserving the newly created habit

The quote „Once you'll get there your body never forgets" really is scientifically underpinned. The theory of muscle memory is an important aspect when implementing

health promotion activities among employees. Muscle memory is most associated with learning new skills and motor learning, such as learning how to perform physical activity.

According to Ramirez Varela et al. (2021), muscle memory allows athletes to perform motor functions faster and with greater accuracy without having to think about them. In addition, muscle memory allows athletes to take a break from training and competing. During that time, their muscles and the neural pathways will weaken because of disuse, but when they resume training, they can return to their previous athletic state and gradually regain muscle size without having to start from square one.

When we learn a new skill or practice a particular movement, the brain creates neural pathways and connections that control the associated muscle groups. (Lee et al., 2018; Rahmati et al., 2022). These connections become more efficient and well-coordinated through repetition, and performance of the task with increased accuracy and ease (Murach et al., 2020).

The basal ganglia contribute to skill learning and the automation of movements, while the cerebellum refines and coordinates motor patterns, ensuring precision and timing (Murach et al., 2020, Psilander et al., 2019). The prefrontal cortex, responsible for decision-making and conscious control, may become less active as the skill is automated. This allows the skill to be performed more effortlessly and with less conscious effort (Murach et al., 2020; Psilander et al., 2019; Rahmati et al., 2022).

The brain continuously receives feedback from sensory systems, including proprioception (awareness of body position), vision, and touch, during the execution of the skill. This feedback helps the brain make real-time adjustments to improve accuracy and consistency (Murach et al., 2020; Psilander et al., 2019). The hippocampus, involved in memory and learning, may play a role in the consolidation of motor memories during

this phase, contributing to the long-term retention of the skill (Murach et al., 2020; Psilander et al., 2019).

The time it takes for muscle memory to “come back” can vary widely depending on several factors, including the complexity of the skill, the duration and intensity of previous training, and individual differences (Mesquita et al., 2023, Qiu et al., 2023).

2.2.8. How exercise impacts brain functioning

Exercise facilitates the release of neurotrophic factors such as peripheral BDNF (Hötting et al.,2016), a neurotrophin involved in all the most important aspects of neuroplasticity, from neurogenesis to neuronal survival, from synaptogenesis to cognition, as well as in the regulation of energy homeostasis.

Physical activity increases blood flow, improves cerebrovascular health, and determines benefits on glucose and lipid metabolism carrying “food” to the brain (Mandolesi et al.,2017), increases the levels of serotonin, a neurotransmitter that modulates the neural activity and a wide range of neuropsychological processes (Berger, Gray & Roth, 2018) and beta-endorphins.

Many experiments and clinical studies have shown that physical exercise affects brain plasticity, influencing cognition and well-being (Weinberg & Gould, 2015). In addition, neuroplasticity is an important feature of the nervous system, which can modify itself in response to experience (Bavelier & Neville, 2002).

A great number of studies demonstrated that in adults, physical exercise determines structural changes such as increased gray matter volume in frontal and hippocampal regions (Erickson et al., 2011; Colcombe et al., 2006;) and reduced damage in the gray matter (Chaddock-Heyman et al., 2014).

Numerous studies have demonstrated that physical exercise prevents cognitive decline linked to aging (Hötting & Röder, 2013; Niemann et al., 2014; Yaffe et al., 2009), reduces the risk of developing dementia (Mandolesi et al., 2017), the level of deterioration in executive functions (Hollamby et al., 2017) and improves the quality of life (Pedrinolla et al., 2017).

Among the psychological hypotheses proposed to explain how exercise enhances well-being, have been underlined feeling of control (Weinberg & Gould, 2015), competency and self-efficacy (Craft, 2005), improved self-concept and self-esteem (Fox, 2000; Marsh & Sonstroem, 1995; Zamani Sani et al., 2016), positive social interactions and opportunities for fun and enjoyment (Bartlett et al., 2011; Raedeke, 2007).

2.2.9.Functional Movement

Movement is present before we are even born; we are jumping, stretching, waving, and touching our mouth and nose and that is all necessary for developing our brain and body for this fast-moving world. Movement governs our ability to interact with the world, and thus the experience of life itself. Complex interactions between brain regions and the spinal cord govern body motion, which is ultimately driven by muscle activation (Bruel et al., 2024).

According to Montessori, an Italian physician and educator, at each age, one must seek the opportunity for the greatest effort, and the greatest social experience one can reach actively. (Montessori, 2019). It is crucial for our life satisfaction and performance, intrinsic motivation, and professional and private productivity.

Due to a sedentary lifestyle, people lose the strength and control of core muscles, mobility, flexibility, and correct breathing patterns, they lose functional movement. Therefore, this program will include contralateral movement, rocking and rolling

patterns, and animal flow to restore the movement that we are born to have. Those movements stimulate the nervous system and awaken foundational inborn movement patterns.

In physical therapy, contralateral movement is important all over from prevention to treatment. They are used to improve coordination and stability, to restore balance, to improve movement quality and body awareness. Many rehabilitation techniques include contralateral moving patterns to unlock inborn crawling/walking patterns, and there are many of them use the knowledge of neurodevelopmental kinesiology of a newborn.

When we are babies crawling makes us ready to stand up and beat gravitation. To walk, to socialize, and become independent. It is a rhythmic movement between the upper and lower limbs characterized by diagonal coordination (Zhang et al.2019), arm strength, and balance (Freedland & Bertenthal, 1994) which is essential for adaption to the environment and to enhance the development of general motor skills (Held & Hein, 1963; McEwan et al., 1991). As for other motor skills, changes in crawling postures and proficiency are related to improvements in locomotor proficiency and changes in infants' brains (Adolph et al., 1998). Contralateral movement activates both brain hemispheres, which can enhance communication and information processing, due to the creation of new pathways between cells.

Furthermore, the skill of rolling is an early developmental task that continues to be used throughout a lifetime. Once a human is upright for motor tasks, rolling becomes less important for movement or access to the environment and, thus, is used less and becomes altered or uncoordinated due to muscular weakness, stiffness or tightness of structures, or lack of stability in the core muscles.

Rolling combines the use of the upper extremities, core, and lower extremities in a coordinated manner to move from one posture to another. It can be used as both a

functional activity and an exercise for the entire body (Adler et al., 2007). Without a doubt, mobility, core stability, controlled mobility, and properly sequenced loading of the segments of the body are required to perform rolling correctly.

The quadrupedal crawling exercises used in animal flow improve cognitive skills and joint repositioning sense (Mathews et al., 2016). Their results indicate that quadrupedal movement can improve various active joint ranges of motion and whole-body stabilization and flexibility.

Due to individual gait biomechanics, innate and hereditary characteristics of the body, injuries and individual lifestyle muscular imbalance occurs. It increases stress on joints and tendons, impacts posture, and produces pain, if not lead to another injury. Therefore, it is important to prevent those imbalances using functional movement exercises to make daily activities easier and painless.

2.2.10. The Role of Positive Psychology on Physical Activity Engagement

Positive psychology was defined as the science of positive subjective experience, positive individual traits, and positive institutions that promote a high quality of life (Seligman & Csikszentmihalyi, 2000).

Positive psychology examines how individuals derive a sense of well-being, belonging, meaning, and purpose for participating in different life domains, social groups, and organizations (Seligman & Csikszentmihalyi, 2000). It has flourished from happiness, individual development, subjective well-being, optimism, self-determination theory, adaptive mental mechanisms, emotions, health, wisdom, excellence, creativity, giftedness, and positive youth development.

This idea is supported by evidence that positive affect is related to proactive socialization (Ashforth, Sluss & Saks, 2007), taking charge behaviors (Fritz &

Sonnentag, 2009), envisioning (Bindl & Parker, 2010), and the setting of more challenging goals (Ilies & Judge, 2005).

Several other studies have found positive relationships between positive affect or mood and job performance and organizational citizenship behaviors (Fisher & Noble, 2004; Lee & Allen, 2002; Lyubomirsky, King & Diener, 2005)

Positive organizational culture and employees' characteristics of kindness, creativity, humor, optimism, and generosity have been related to improved employee performance (Ramlall, 2008).

Positive affect has also been related to positive health outcomes such as increased longevity (Danner, Snowdon & Friesen, 2001), lower susceptibility to colds (Cohen et al., 2003), reductions in risk of stroke (Ostir et al., 2001), and a host of other health benefits (Pressman & Cohen, 2005).

Positive emotions can promote effective means of coping with stress, recovery from stressful events, engagement in a wider variety of experiences, and openness to new information (Fredrickson, 2000; Fredrickson & Branigan, 2005; Fredrickson & Losada, 2005).

Due to high interest and demand on this topic through many research disciplines, some key theories in positive psychology apply to the workplace's overall health such as the Broaden-and-Build theory, Orientations to happiness, psychological capital (PsyCap), and Sustainable Happiness theory.

Broaden-and-Build theory. The broaden-and-build theory provides a theoretical framework for understanding why positive emotions have such beneficial effects on employee well-being and performance outcomes. This theory proposes that positive emotions tend to broaden individuals' thought-action repertoires and scope of attention, whereas negative emotions tend to narrow them (Fredrickson, 1998, 2001)

Orientations to happiness. Orientations to happiness explain various characteristics of happiness, including feeling good, actively learning and engaging in one's environment, and meaning and self-expression (Bono et al.,2012; Fredrickson & Losada, 2005).

Seligman and his colleagues (Peterson, Park & Seligman, 2005; Seligman et. al., 2004) argued that these characteristics represent three distinguishable means toward becoming truly happy and proposed a three-component model of orientations to happiness: hedonism, eudaimonia, and engagement, which refer to seeking pleasure, seeking meaning, and seeking gratification.

People typically associate the term "happiness" with hedonic pursuits of activities that feel good to us physically or psychologically (Baumgardner & Crothers, 2009; Seligman et al., 2004). Pleasure may have an important motivational role in the workplace and may drive efforts to engage in tasks that an employee enjoys doing. Subjective well-being may be the most studied construct in positive psychology, and it refers to a person's evaluation of how their life is going, defined by high life satisfaction, low negative affect, and high positive affect (Diener, 2000).

This construct represents a hedonic perspective because it is related to happiness and pleasure (Baumgardner & Crothers, 2009). In a workplace context, subjective well-being has been linked to job performance, task performance, and organizational citizenship behavior (Bakker & Oerlemans, 2011; Fisher & Noble, 2004; Lee & Allen, 2002; Lyubomirsky et al., 2005).

Seligman et al. (2004) argued that the pursuit of hedonic happiness alone is not enough to lead to optimal well-being and fulfillment.

Another orientation to happiness, eudaimonia, involves pursuing life activities that are meaningful and that serve others in some way (Seligman et al., 2004). This route to happiness involves a moral component and/or personal expressiveness that contribute to optimal well-being. Experiencing challenges and obstacles can make life more meaningful and gratifying (Seligman, 2002).

At the individual level, meaningful work has been related to greater well-being (Arnold et al., 2007), greater job satisfaction (Wrzesniewski et al., 1997), greater intrinsic motivation to work (Duffy & Sedlacek, 2007; Wrzesniewski, Tosti & Landman, 2011), and greater meaning in life (Dik, Sargent & Steger, 2008). At the organizational level, meaningful work is related to higher organizational commitment more employee time spent at work (Duffy, Dik & Steger, 2012; Wrzesniewski et al., 1997), and more effective teamwork (Wrzesniewski, 2003).

The third route to happiness is engagement, which involves pursuing challenging and worthwhile activities that provide gratification through the application of one's strengths and skills (Peterson et al., 2005; Seligman et al., 2004). Engagement is defined by Schaufeli et al. (2002) as a fulfilling state characterized by vigor (high level of energy), dedication (shows commitment to the task and enthusiasm), and absorption (unaffected by distractions and immersed in the activity).

Job resources such as social support, autonomy, and performance feedback and personal resources such as resiliency and self-efficacy are predictors of engagement and flow experiences at work (Bakker, 2005; Baaker & Demerouti, 2008). Engagement in any given activity is more likely when the activity matches one's strengths (Seligman et al., 2004).

Psycological Capital. Psychological Capital is comprised of four components (self-efficacy, hope, optimism, and resilience). It can be measured and improved to promote better performance (Luthans, 2002a, 2002b).

Self-efficacy refers to confidence in one's ability to complete a task (Stajkovic & Luthans, 1998). Hope is a motivational state where one has both goal-directed thoughts and also develops pathways toward achieving those goals (Snyder, 2002). Optimism refers to a general expectation that events in the future will be positive (Carver & Scheier, 2002). Finally, resilience refers to the ability to "bounce back" from adverse events (Luthans, 2002b).

These four components combine into the core construct of Psychological Capital, which is a higher-order construct that generally involves having a positive perspective of life experiences, access to physical and psychological resources, and a greater perceived chance of success due to one's choices, effort, and perseverance (Luthans et al., 2007).

By developing these core psychological competencies of their employees, organizations may promote self-awareness in leaders and employees and a more positive perception of what they can aspire to within their organization (Avolio & Luthans, 2006; Luthans & Avolio, 2003). Psychological Capital can be assessed through the Psychological Capital Questionnaire (Luthans et al., 2007), which has predictive validity for constructs such as absenteeism, performance, and job satisfaction (Avey, Patera & West, 2006; Luthans et al., 2007; Luthans et al., 2005).

Sustainable happiness theory. Sustainable happiness theory addresses the extent to which individuals have control over their levels of happiness. Lyubomirsky et al. (2005) claim that sustainable happiness theory builds on the hedonic treadmill theory by incorporating the effects of individual differences and suggesting that, based on evidence from twin studies, long-term panel studies, and studies of the effects of life events on

happiness, only about 50% of any individual's happiness is determined by a heritable set point. The remaining 50% of one's happiness is comprised of 10% stable life circumstances (such as health, demographic characteristics, or life events) and 40% of intentional activities that a person chooses to engage in. These intentional activities provide a means through which individuals can "boost" their happiness by engaging in positive activities that alter their perspective on themselves, their lives, and the world in general (Lyubomirsky et al., 2005)

According to the hedonic treadmill theory (Brickman & Campbell, 1971), individuals have a neutral emotional set point to which they always return after experiencing either a pleasurable or unpleasant event. However, this theory has recently been criticized and revised to suggest that happiness can in fact increase (or decrease) depending on the activities an individual chooses to engage in (Diener, Lucas & Scollon, 2006; Lyubomirsky, Sheldon & Schkade, 2005).

Sustainable happiness theory provides a basis for developing individual-level interventions for promoting happiness. Successful interventions for promoting happiness include expressing gratitude, counting one's blessings, performing acts of kindness toward others, and visualizing one's best self (Boehm & Lyubomirsky, 2009; Lyubomirsky et al., 2005).

These results suggest that taking time to actively express gratitude, to focus on the positive, and to engage in activities that use one's strengths can be effective strategies for promoting happiness and well-being which explains why exercise and physical activity could be a valuable component of sustainable happiness theory.

2.2.11. HERO Model for Organizational Wellbeing

Psychological mechanisms by which empowerment enhances engagement at work are based on the Healthy and Resilient Organization (HERO) Model (Salanova et al., 2012).

A HERO is defined as an organization that makes systematic, planned, and proactive efforts to improve employees, teams, and organizational processes and outcomes and can maintain positive adjustment and desirable functions and outcomes under challenging conditions or in crises.

It is interesting to notice that Luthans (2012) used the HERO acronym as well but on a more individual level to describe the elements of Psychological Capital—Hope, Efficacy, Resilience, and Optimism (Luthans, 2012).

The main assumption of the HERO Model is that the collective experience of well-being at work is a result of the combination of three interrelated elements: healthy organizational resources and practices (e.g., job resources, healthy organizational practices), healthy employees/teams (e.g., trust, work engagement), and healthy organizational outcomes (e.g., high performance, corporate social responsibility).

2.2.12. AMSO Model – A guidance for implementing health promotion activities

AMSO Model (Awareness, Motivation, Skills, Opportunity) of behavioral change was created by Dr. Michael O'Donnell and explains the connection between health behavior and health condition. Within this study, an AMSO model gave guidance about habit formation by scientifically explaining what affects it. That is explained by the percentage of the AMSO model, a simple framework to describe what works best, improving Awareness, enhancing Motivation, Building Skills, and providing Opportunities (McDonnell, 2005).

According to McDonnell, only 5% of behavior change is caused by increasing awareness through classic education programs. The real value of the awareness piece is mobilizing group support.

According to McDonnell (2010), motivation is simply not enough. Even the most motivated people wouldn't go for healthy behavior focusing on just the health risks. A holistic approach is needed, to help people to discover their life passions and the link between their passions and health and develop goals to achieve those passions (McDonnell, 2010).

By reviewing about 1,700 research manuscripts from the American Journal of Health Promotion, McDonnell suggests that extrinsic motivation is only viable in the short term (financial incentive), but for creating a long-term habit we need to shift to intrinsic motivation. Those are things like feeling better physically, having more energy, feeling good about yourself, and being a good role model. So, we should use financial and other extrinsic incentives to engage people but shift to intrinsic incentives to produce healthy behavior change (McDonnell, 2010).

Skills explain the three types of goals that lead to change. They are aspirational, learning, and performance goals. Performance goals are those that will produce the result of improved health. It also explains that we as professionals need to be able to create a strategy based on motivational readiness to change, self-efficacy, behavioral efficacy, the belief that performing a behavior leads to the outcome that’s desired, preferred learning style, and the necessary level of intensity. As explained earlier, self-efficacy is the belief that we can do something specific and it is so important because of its predictive power. Self-efficacy predicts who joins programs; it predicts times to relapse; predicts how a person will complete a program (McDonnell, 2010).

To summarize, 5 % goes to Awareness, only 25 % goes to Skills, 30% to Motivation and the biggest number, 40% belongs to the Opportunity element. It means having an environment that will support healthy behavior and a safe and engaging environment for physical activity will lead to behavioral change.

Providing opportunities for employees to expand their knowledge, skills, abilities, and experiences has also been suggested as a contributor to the well-being of employees (Grawitch et al., 2007; Pfeffer, 1998).

Behind the scenes of the AMSO model and any other theoretical framework that helps to conduct this research, the education of participants is an inevitable factor in adopting a healthy habit and obtaining a change of lifestyle in the long term.

Through delivering science-based knowledge through the AMSO Model of Awareness, Motivation; Skills, and Opportunity participants will more easily adopt new challenges and transform them into positive behavior that will become a daily routine.

2.2.13. Learning and knowledge for organizational development

Considering all the mentioned above, using the AMSO model for presenting health promotion activities, and delivering education and knowledge is the key element for the successful implementation and adoption of physical activity in the long term. When educated, people are more likely to behave in a given manner due purpose to be known.

Since this study aims to provide a detailed insight into enhancing empowerment among employees through the increased level of physical activity it is important to offer knowledge about body movement and physiology to achieve a higher level of motivation and long-term behavior changes that will impact productivity. It is widely known that knowledge and innovation are vital sources of competitive advantage and therefore

investing in such forms of education is important for organizational growth and development.

There is no real learning without any form of curiosity, a strong desire to learn something new, and enjoying the journey while expecting the outcomes (Gruber et al., 2014). Curiosity prepares the brain for learning. The researchers found that when the participants' curiosity had been sparked, there was not only increased activity in the hippocampus, which is the region of the brain involved in the creation of memories but also in the brain circuit that is related to reward and pleasure.

For this research, John Dewey's theory of „learning by doing "and transformative learning theory by Mezirow are the key concepts of accepting and acknowledging given tasks. Transformative learning theory by Mezirow though says that the process of "perspective transformation" has three dimensions: psychological, changes in the understanding of the self, convictional, revision of belief systems, and behavioral, lifestyle changes (Boyd & Myers, 1988).

The whole idea is based on the fact that when people get some new knowledge, they evaluate past actions and understanding. It's shifting from the point of view of critical reflection and analysis of their past moves and beliefs. They become aware of what they were doing and why and how this new experience changed their point of view. To see things from another perspective gives meaning to a person who gives and the one who acquires the knowledge.

Learning gives opportunities and for that reason, people should never stop learning, especially about their own body and movement. This study aims to address the important role that health professionals should have, to constantly increase health awareness within society. The knowledge they hold is there to share, to make a difference throughout the experience.

Participants in learning and development lead to the organizational commitment of employees and better job satisfaction (Maurer et al. 2003). Many advantages go on behalf of workplace setting to promote health in such a way. Due to time and financial constraints, in a workplace setting is possible to address more potential risks in one place. In addition, not everybody would choose health behavior easily, unless it is presented or offered by the employer. Consequently, the employer assumes greater responsibility for society.

Health is a fundamental human right and health equity is achieved when everyone can attain their full potential for health and well-being and as such, health is an exceptional tool for creating higher performance and productivity.

2.2.14. Salutogenic Approach to Workplace Health Promotion

Health promotion is rooted in the concept of salutogenesis, as articulated by Aaron Antonovsky, a medical sociologist, and it has focused on studying the origins of health, instead of the origins of disease. A health-promoting setting is the place or social context in which people engage in daily activities in which environmental, organizational, and personal factors interact to affect health and well-being (WHO 1998).

As a theoretical framework for understanding positive health, the salutogenic model focuses on positive well-being rather than illness and the 'salutary' factors that determine health rather than the pathogenic factors. The model's core construct of a sense of coherence is vital to understanding positive mental health and well-being as it involves the capacity to comprehend and make sense of one's own experiences and the ability to manage and respond flexibly to the inevitability of life stressors. This approach is

concerned with enabling individuals and populations to increase control over and improve their health and well-being.

According to Antonovsky, health is movement on a continuum of ease and disease (Antonovsky, 1993b) and he argued that it is very rare indeed to be completely healthy (Antonovsky, 1979) which explains Antonovsky's salutogenic model and its core concept of "sense of coherence", to focus on the ability of individuals to cope with stressors in life and stay healthy.

Overall, one can say that approximately three-quarters of the measures used in the workplace health promotion studies were categorized as pathogenic measures (health behavior, disease and injury, and absenteeism), one-eighth as salutogenic measures (positive health), and another eighth including both salutogenic and pathogenic aspects (workability and general health).

Thus, it seems obvious that pathogenic thinking still prevails within psychology and health promotion, and that promoting salutogenic thinking within the realm of occupational health is highly needed.

2.3 Empirical Studies on Physical Activity and Productivity

2.3.1 Summarize the findings of previous studies on physical activity and productivity in the workplace

Previous studies have examined the relationship between physical activity and productivity in the workplace. The findings suggest that physical activity can have a positive impact on productivity. For example:

Pronk et al. (2004) found statistically significant relationships between several lifestyle-related modifiable health risk factors and employee work performance.

Von Thiele Schwarz & Hasson (2011) found that employees who participated in a workplace physical activity intervention had improved job performance and reduced sick leave compared to those who did not participate.

Compernolle et al. (2019) found that employees who engaged in physical activity during the workday had improved cognitive performance and work engagement.

Polg-Rubera et al. (2017) found that better performance was linked to employees being more active and higher total sitting time during nonworking days and lower sitting time during workdays also improved performance.

Coulson, McKenna & Field (2008) found that self-directed exercising at work impacts self-reported work performance by mood measuring. Performance indicators were higher on ExD (exercise days, versus NExD (all $p < 0.01$), independent of exercise specifics and workload.

Etemadi et al (2016), based on data from 60 articles between 1969 and 1999, and 2000 and 2015 reveals that there is a direct relationship between company performance, productivity, and fitness. Effects were seen in job satisfaction and commitment, cognition, and memory, self-confidence/self-efficacy, decreased weight/increased physical activity, and psychological well-being and stress level.

Crespo et al. (2011) found that multiple worksite physical activity promotion strategies based on environmental supports and policies may increase recreational physical activity and decrease sedentary lifestyles.

Mills et al. (2002) suggests that a well-implemented multicomponent workplace health promotion program can produce sizeable changes in employees' health risks and work productivity

Grzywacz et al. (2007) showed that physical activity and work flexibility may contribute to positive lifestyle behaviours and may play an important role in effective workplace health promotion initiatives.

Pronke & Kottke (2009) described that physical activity promotion should be an integrated initiative that measurably improves worker health and enhances business performance.

However, some studies have also found mixed or negative results. For example:

Proper et al. (2002) reveals that the evidence of an effect was limited for absenteeism, inconclusive for job satisfaction, job stress, and employee turnover, and nil for productivity. The scientific evidence on the effectiveness of physical activity programs at worksites is still limited

Proper et al. (2006) that no relation was found between moderate physical activity and sick leave while vigorous physical activity had significantly less sick leave.

Diaz-Benito, Barriopedro & Vanderhaegen (2020) shows high variability in meta-analyses of effectiveness of Physical activity and health promotion programs in the workplace in European organizations

Iqbal, Ahmad & Gillani (2021) reveals a near-zero correlation of exercise with an employee's job performance.

Brown et. al (2011) indicates that physical activity and employee psychosocial health are positively related but there is limited evidence of a relationship between physical activity and presenteeism.

2.3.2 The strengths and limitations of these studies

While previous studies have examined the relationship between physical activity and productivity in the workplace, it is important to consider their strengths and limitations.

Many of the studies use randomized controlled trial (RCT) designs, which are considered the gold standard for evaluating the effectiveness of interventions.

Some studies use objective measures of physical activity (e.g., accelerometers) rather than self-reported measures, which can be more accurate.

Many studies use validated measures of productivity, such as work output or absenteeism, rather than relying on self-reported measures.

Some studies use longer follow-up periods, which can provide a more comprehensive evaluation of the intervention's effects over time.

Some studies have relatively small sample sizes, which may limit the generalizability of their findings.

Many studies are conducted in specific workplaces or industries, which may limit their applicability to other settings.

Many studies rely on self-reported measures of physical activity and productivity, which can be subject to bias or measurement error.

Some studies do not control for other factors that could affect productivity, such as work demands or organizational culture.

Some studies have relatively short follow-up periods, which may not capture the longer-term effects of the intervention.

Many studies did not use the relevancy of other factors that affect exercise, such as pain or comorbidity.

Some studies did not incorporate data on motivation level which could be an important determinant of increased fitness level and productivity.

Some studies did not include the present level of job satisfaction which is the key determinant to perform better.

Many studies have only on-site interventions which could not be applicable for all industries.

2.4 Individual-Level Physical Activity Interventions

Individual-level physical activity interventions focus on increasing the physical activity levels of individual employees through personalized interventions. Some common interventions include coaching, goal-setting, and feedback on progress. The following research has been conducted on individual-level physical activity interventions in the workplace:

Coaching interventions: Coaching interventions involve working with employees to set physical activity goals, providing feedback on progress, and helping employees overcome barriers to physical activity. A study by Gawlik et al. (2023) shows that physical activity can contribute to the improvement of employees' physical activity. Thus, it explains the workplace as another coaching setting to counteract the lack of physical activity in everyone's daily life.

Goal-setting interventions: Goal-setting interventions involve helping employees set specific, measurable, achievable, relevant, and time-bound (SMART) physical activity goals. A study by McEwan et al. (2016) found that multi-component goal-setting interventions represent an effective method of fostering physical activity across a diverse range of populations and settings.

Feedback interventions: Feedback interventions involve providing employees with regular feedback on their physical activity levels and progress towards their goals. A study by Harkin et al. (2016) found that progress monitoring has a robust effect on goal attainment and constitutes a key component of effective self-regulation.

Technology-based interventions: Technology-based interventions involve using digital tools, such as mobile apps or wearable devices, to promote physical activity among employees. A study by Lennefer et al. (2019) found that a technology-based intervention led to increased physical health over time even though it was not effective in enhancing work-related well-being. Another study by Domin et al. (2021) found that smartphone-based mHealth interventions aimed at promoting physical activity levels showed promising results for behavior change.

2.4.1. The key features and components of effective individual-level interventions

Here are some key features and components of effective individual-level physical activity interventions:

Personalization: Effective individual-level interventions should be tailored to each employee's unique needs, preferences, and abilities. This can be achieved through one-on-one coaching sessions or personalized goal-setting.

Goal-setting: Clear and specific physical activity goals should be set with the employees, which are measurable, achievable, relevant, and time-bound. Goals should be realistic and reflect the employee's physical abilities, interests, and work schedule.

Feedback: Regular feedback on physical activity levels and progress towards goals can be an effective way to motivate employees and increase their engagement in physical activity. Feedback can be provided through various channels, such as mobile apps, wearable devices, or in-person coaching sessions.

Incentives: Providing incentives such as rewards, recognition, or additional time off work can increase employees' motivation and adherence to physical activity goals.

Social support: Encouraging social support networks, such as workout buddies or group exercise classes, can provide employees with a sense of community and accountability, which can increase their engagement in physical activity.

Sustainability: The interventions should be designed to promote long-term behavior change and not just short-term improvements. The interventions should be sustainable and easy to integrate into employees' daily routines.

2.4.3 The challenges and barriers that can affect the success of these interventions

Time constraints: Many employees may perceive physical activity interventions as time-consuming, which can be a barrier to participation. Balancing work and personal responsibilities can also make it difficult for employees to find time to engage in physical activity.

Lack of motivation: Some employees may lack motivation to participate in physical activity interventions. This can be due to personal factors such as low self-efficacy or lack of interest, or due to external factors such as job stress or workload.

Inadequate resources: In some workplaces, resources for implementing physical activity interventions may be limited. This can include a lack of facilities, equipment, or trained staff to support the interventions.

Organizational culture: The organizational culture may not support physical activity interventions, and there may be little support or encouragement from managers or coworkers.

Health concerns: Some employees may have health conditions that make it difficult or unsafe to engage in physical activity, and interventions may need to be adapted or modified to accommodate their needs.

Limited sustainability: Even with the best intentions, it can be challenging to sustain employee engagement in physical activity interventions over the long term. Without ongoing support and encouragement, employees may revert to old habits or lose interest in the intervention.

2.5 Empowerment and Productivity

2.5.1 The concept of empowerment and its relationship with productivity

Empowerment is generally defined as the process of enabling individuals or groups to take control of their lives and work by developing their skills and abilities, and by providing them with the resources, information, and support they need to succeed.

The concept of power in the context of empowerment is the ability to mobilize human and material resources to get things done (Kanter, 1979).

Empowerment has been linked to a range of positive outcomes in the workplace, including increased job satisfaction, commitment, and motivation, as well as improved performance and productivity. Encouraging and allowing individuals to take personal responsibility for improving the way they do their jobs and contributing to the organization's goals (Megginson & Clutterbuck, 1995). It may be considered not only as a way of preventing job dissatisfaction and negative effects, such as absenteeism; but also, as a means of enhancing positive experiences, such as engagement (Spreitzer, 1996).

Empowerment is manifested in four cognitive factors relating to their work role: competence (an individual's belief in his or her capability to be effective, impact, the degree to which an individual can influence strategic, administrative, or operating outcomes at work, meaningfulness the value of a work goal or purpose, judged about an individual's ideals or standards, and self-determination, an individual's sense of having a choice in initiating and regulating actions (Conger & Kanungo, 1988; Thomas & Velthouse, 1990).

In an organizational context, empowerment is generally thought of as an individual learning process, especially during organizational changes, in which an employee reconstructs his or her ways of thinking and acting (Suominen et al., 2008).

The concept of empowerment in organizational settings is receiving an increasing amount of research attention, especially during these times of change, innovation, and economic and financial crises. The competitive global environment requires employees to utilize their capabilities and their full potential.

Several theoretical frameworks underpin the relationship between empowerment and productivity. One of the most prominent is the social exchange theory, which posits that employees who feel empowered are more likely to reciprocate by putting forth greater effort and commitment, which can in turn lead to increased productivity. Other theories, such as self-determination theory and job demands-resources theory, emphasize the importance of meeting employees' psychological needs for autonomy, competence, and relatedness to promote engagement, well-being, and productivity.

Several empirical studies have investigated the relationship between empowerment and performance in the workplace. These studies have generally found positive associations between employee empowerment and a range of productivity-related outcomes, including job performance, creativity, innovation, and customer

satisfaction. Using a meta-analysis of primary research consisting of 151 independent samples involving 53,200 employees, Chamberlin, Newton & LePine (2018), found that not only do empowerment and voice independently transmit the effects of high-performance managerial practices to job performance, but they sequentially mediate this relationship as well.

However, there are also some limitations to consider when interpreting these findings. For example, the relationship between empowerment and productivity may be influenced by a range of factors, such as the specific nature of the empowerment intervention, the context in which it is implemented, and the characteristics of the employees involved. Additionally, some studies have found mixed or non-significant results when examining the link between empowerment and productivity, suggesting that the relationship may not be straightforward or universal.

Overall, while the concept of empowerment has received significant attention in organizational research as a potential driver of productivity, more research is needed to better understand the mechanisms underlying this relationship and to identify strategies for effectively promoting empowerment in the workplace.

2.5.2 The literature overview on empowerment in the workplace, including its impact on job satisfaction, motivation, and performance

Engagement and empowerment are related. Engagement increases productivity, improves performance, lowers turnover, and attracts talent. Empowerment is the fuel and employee engagement is the fire. Engagement is “a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption” (Schaufeli et al., 2002). Vigor is characterized by high levels of energy and mental resilience while

working, the willingness to invest effort in one's work, and persistence even in the face of difficulties. Dedication refers to being strongly involved in one's work and experiencing a sense of significance, enthusiasm, inspiration, pride, and challenge. Absorption is characterized by being fully concentrated and happily engrossed in one's work, whereby time passes quickly and one has difficulties to detach oneself from work. Research has shown that vigor and dedication are considered direct opposites of exhaustion and cynicism, respectively—the two core symptoms of burnout (González-Romá et al, 2006).

Finally, and most importantly, employees and teams that are work-engaged perform better (Salanova, Agut & Peiró, 2005; Torrente et al., 2012;)

Empowerment is a process through which employees are given autonomy, authority, and resources to make decisions and take actions that affect their work. Empowerment has been studied extensively in the organizational behavior literature, and there is evidence to suggest that it can have a positive impact on a variety of outcomes, including job satisfaction, motivation, and performance.

Work empowerment is positively related to increases in psychological capital in terms of self-determination (Deci, Connell & Ryan, 1989); self-worth (Nielson, 1986); satisfaction of their needs for power, autonomy, control, and self-efficacy (Thomas & Velthouse, 1990); competence, innovation, and creativity (Zhang & Bartol 2010); and decision involvement (Laschinger, Sabiston & Kutzscher, 1997). Other consequences of empowerment are better work attitudes (Mishra & Spreitzer, 1998), job satisfaction (Patrick & Laschinger, 2006), job motivation (Laschinger et al., 2004), and trust in managers (Laschinger et al., 2001) which put the process of empowerment crucial for developing more productive employees.

Research has shown that when employees feel empowered, they are more likely to take ownership of their work and feel a sense of responsibility for their outcomes. This can lead to increased job satisfaction, as employees feel more interested in their work and more fulfilled by their accomplishments. Additionally, empowered employees are more likely to be motivated to perform well, as they are given the freedom to make decisions and take actions that align with their personal goals and values. According to Spreitzer (1996), empowered individuals believe they have greater autonomy and impact on work processes and performance, and they are likely to be more intrinsically motivated and in turn, engaged in their respective work roles.

In terms of performance, research has shown that empowered employees are more likely to take initiative and innovate in their work, leading to increased productivity and effectiveness. Studies have also found that empowerment can have a positive impact on teamwork and collaboration, as empowered employees are more likely to engage in open communication and information sharing. Team empowerment is positively related to team productivity and proactivity (Kirkman & Rosen, 1999).

However, there are also potential downsides to empowerment. Some studies have found that when employees are given too much autonomy or authority without sufficient guidance or support, they can become overwhelmed or disengaged. Additionally, if employees do not have the necessary skills or resources to make effective decisions and take action, empowerment may not lead to improved performance or productivity.

Overall, while empowerment has the potential to enhance productivity in the workplace, it is important for organizations to carefully consider the implementation and support of empowerment initiatives to ensure their success.

Empowerment provides the structure and the means for employee engagement to flourish. If we trust each other, work collaboratively in solving problems, and create a

supportive communication environment, there is a good chance that employee engagement will follow.

2.5.3 The potential role of physical activity empowerment in enhancing employee empowerment and productivity

While there is limited research specifically examining the relationship between physical activity empowerment and productivity, there is evidence to suggest that physical activity can play a role in enhancing empowerment, which may in turn lead to increased productivity.

Exploring empowerment in exercise may reveal mechanisms to facilitate exercise self-efficacy and engagement in physical activity.

Physical activity can provide employees with a sense of control over their health and well-being, which may translate into increased feelings of empowerment. Additionally, physical activity can improve mood, reduce stress, and enhance cognitive function, which may in turn lead to increased motivation and productivity.

Some studies have specifically examined the impact of physical activity interventions on employee empowerment. For example, a study by Streetman et al. (2023) study examined the relationship between physical activity empowerment, exercise self-efficacy, and engagement, which may indicate increased empowerment. The study found out that some exercise types are more empowering than others, and empowerment and enjoyment are closely related.

Exploring empowerment in exercise may reveal mechanisms to facilitate exercise self-efficacy and engagement in physical activity and how to transfer that feeling to workplace settings. However, it is important to note that the impact of physical activity

on empowerment may depend on the specific intervention and the individual characteristics of the participants.

Overall, while there is limited research specifically examining the relationship between physical activity empowerment and productivity, there is evidence to suggest that physical activity can enhance employee empowerment, which may in turn lead to increased productivity. Future research could explore the potential role of physical activity empowerment in enhancing productivity in more detail, as well as examine the individual and organizational factors that may impact this relationship.

2.6 Summary

The literature review suggests that physical activity can have a positive impact on employee productivity in the workplace. Previous studies have found that physical activity interventions can lead to increased productivity and job performance, as well as reduced absenteeism and presenteeism. However, some studies have found no significant relationship between physical activity and productivity.

Effective physical activity interventions typically involve a combination of individual-level and organizational-level strategies, such as goal-setting, social support, and environmental changes. Individual-level interventions that focus on empowering employees to engage in physical activity can also enhance feelings of autonomy and self-efficacy, which may lead to increased productivity.

Empowerment has been identified as a key factor in enhancing productivity, and physical activity may play a role in enhancing employee empowerment in the workplace. However, the impact of physical activity on empowerment may depend on individual and organizational factors.

While explaining the benefits of workplace health promotion activities and physical activity level improvements it is important to highlight that many studies don't have enough information about individually designed approaches, job satisfaction levels, motivation for work, and exercise in general. There is also a lack of present health status and pain or discomfort if present. Previous studies mostly argue only about worksite intervention programs, while there are limited studies explaining interventions outside working hours.

The study implemented a two-month intervention designed to work with participants on an individual level, aiming to enhance their physical activity levels and empower them for increased productivity in the workplace.

Through a comparison of pre-test and post-test results within the intervention group, the research seeks to provide insights into the effectiveness of individual-level interventions for promoting physical activity and improving productivity.

Furthermore, by focusing on employee empowerment as a potential mechanism underlying this relationship, this study contributed to a deeper understanding of the factors that drive the relationship between physical activity and productivity in the workplace. This study aims to explain whether adequate, neuroscientifically based, individually created exercise programs could lead to an increase in intrinsic motivation to help individuals feel more empowered, engaged, and become more productive.

Individual Approach. While previous studies have explored the relationship between physical activity and productivity, there is a lack of research that focuses on individual-level interventions and empowerment. The proposed study aims to address a gap in the existing literature by focusing on individual-level interventions and empowerment in the context of physical activity and productivity.

Job satisfaction and Motivation. Investigating how workplace health promotion activities impact job satisfaction and motivation for both, work and exercise is important for conducting this study. Assessing the present level of employees' overall satisfaction and motivation levels can provide a more holistic view of the intervention's effects.

Health Status and Pain/Discomfort. Including information about employees' present health status, as well as lifestyle behavior and any pain or discomfort they may be experiencing, this study contributed to a more thorough understanding of the relationship between health promotion activities and overall well-being.

Online Interventions. As online interventions become more prevalent, exploring their effectiveness in improving physical activity levels and overall health is crucial. This study provided valuable insights into the evolving landscape of workplace health promotion.

Finally, the study investigated whether a well-designed, individually tailored exercise program can lead to an increase in intrinsic motivation, empowering individuals, enhancing engagement and ultimately fostering greater workplace productivity.

2.7 Hypotheses

Based on the literature review, the following hypotheses can be formulated:

H01. The intervention group will show a significant increase in physical activity before and after the measures taken

H02. The intervention group will show a significant improvement in productivity before and after the intervention

H03. The intervention group will develop high levels of intrinsic motivation based on tasks mastered

H04. Empowerment will mediate the relationship between physical activity and productivity, such that the positive effect of physical activity on productivity will be stronger for employees who feel more empowered.

H05.There will be individual differences in the effectiveness of the intervention, such that certain employees may respond better to the intervention than others based on factors such as age, gender, and baseline physical activity levels.

H06. Education and knowledge play a pivotal role in empowering individuals, especially when it comes to physical activity. Besides many known benefits, it opens space for personal growth and development.

H07. Online intervention programs with individual and semi-individual approaches could foster greater results than on-site interventions, due to flexibility and time constraints.

In light of the existing literature, the proposed study is expected to generate several outcomes.

First, the study is expected to confirm the positive relationship between physical activity and productivity in the workplace. The literature review has consistently shown that physical activity is associated with increased productivity and job performance, and this relationship is supported by various theoretical frameworks and empirical studies.

Second, the study is expected to demonstrate the effectiveness of individual-level physical activity interventions in enhancing employee physical activity and productivity. The literature review has highlighted the importance of tailoring interventions to individual needs and preferences, and the proposed study will work with participants on an individual level to provide support and guidance for physical activity.

Third, the study is expected to demonstrate an increased level of intrinsic motivation due to tasks they have been asked and managed to master. By literature

provoking intrinsic motivation is important if habit is going to be a long-term. Extrinsic motivation, such as incentives or award programs is responsible only for short-term motivation.

Fourth, the study is expected to demonstrate the mediating role of empowerment in the relationship between physical activity and productivity. Empowerment is an important factor in employee job satisfaction, motivation, and performance, and the proposed study will examine whether increased physical activity leads to greater empowerment, which in turn enhances productivity.

Five, the study is expected to identify individual differences in the effectiveness of the intervention. The literature review has highlighted the importance of considering individual factors in the design and implementation of physical activity interventions, and the proposed study will collect data on individual characteristics to identify factors that may influence the effectiveness of the intervention.

Six, the study would explain the importance that education has on acknowledging and mastering new facts, especially when the topic is your own body and movement. Neuroscience of movement, psychology, physiology, and kinesiology are the main contributors to this study. According to literature, people accept new and unknown better if they are becoming familiar with it, or even better if they start to understand it.

According to the literature, even though people are aware that doing exercise is good for health, there are still many out there who are not physically active enough. By sharing knowledge, and explaining why and how to move better, effectively, and reduce pain this study demonstrated behavioural change regarding the physical activity levels.

Finally, an online intervention program could gain better results than on-site physical activity intervention program due to the flexibility and freedom that participants have while choosing the right time for exercise. Exercise during the launch break could

be a great idea, but sometimes it could shift focus and decrease productivity instead of increasing it.

2.8 Conclusion

The literature review has examined previous studies on the relationship between physical activity and productivity in the workplace, as well as research on individual-level physical activity interventions and empowerment in the workplace. It also included positive psychology theories and models that helped to shape given interventions. The review has highlighted the positive association between physical activity and productivity and identified the key components of effective individual-level interventions.

It has also discussed the potential role of physical activity empowerment in enhancing employee empowerment and productivity. However, there are gaps in the literature regarding the effectiveness of individual-level physical activity interventions and education in enhancing employee empowerment and how it affects productivity. There are gaps regarding job satisfaction and motivation levels, present health status, pain, or discomfort if present. The proposed study aims to address these gaps by conducting a study on the impact of physical activity empowerment on employee empowerment and productivity by increasing the level of intrinsic motivation. Based on the literature review, it is hypothesized that physical activity empowerment positively impacts employee empowerment and productivity.

The review of the literature has provided evidence of the positive relationship between physical activity and productivity, as well as the potential benefits of individual-level physical activity interventions and empowerment in the workplace. However, there is still a gap in the literature on the effectiveness of physical activity empowerment in enhancing employee empowerment and how it affects productivity.

The proposed study aims to fill this gap by conducting a focused investigation on physical activity empowerment at the individual level, and how it influences employee empowerment and productivity. The findings of this study can add to the existing literature on the topic and provide insights for businesses to develop effective interventions that enhance employee empowerment and improve productivity.

CHAPTER III:

METHODOLOGY

3.1 Research Design

The research design for this study is quasi-experimental. This design was chosen to compare the effects of an individual-level physical activity intervention on employee empowerment and productivity in the workplace. The first step involves assigning participants to an intervention group based on pre-existing conditions. This design was suitable for this study as it allows the comparison of pre-test and post-tests of participants with similar characteristics while minimizing potential confounding variables.

The experimental design was chosen for this study as it allows for the manipulation of the independent variable (physical activity intervention) and the measurement of the dependent variable (productivity) while controlling for extraneous variables. This design is particularly suited for investigating cause-and-effect relationships between variables, which is necessary for examining the impact of physical activity on productivity in the workplace. By randomly assigning participants to the intervention group, the study minimized potential bias and increased the internal validity of the results. Additionally, the use of pre-and post-intervention measures enhanced the study's ability to detect changes in productivity following the intervention.

3.2 Data Collection Methods

In this section, there is an explanation of the data collection methods used in this study. Questionnaires were used as the primary data collection method to gather quantitative and qualitative data from the participants. The survey instrument was designed to collect data on physical activity levels, employee empowerment, present health status, nutrition and sleep data, psychological capital measurement, motivation for

doing sports, and work intrinsic and extrinsic motivation. The survey consisted of open-ended, closed-ended, multiple-choice, and Likert scale questions. Due to the individual approach, interviews were done with a subset of individuals at the beginning and during the study. Short weekly surveys were conducted at the end of each week to gather immediate feedback and information about the exercise done.

Two questionnaires, the Lifestyle and Health Risk questionnaire, and Physical Therapy questionnaire were filled out only at the beginning of the research to collect data about health risks and present health status and healthy habits, present pain or any other comorbidities, expectations about the program and willingness of include an effort to improve health and healthy habits.

The other four questionnaires were filled out at the beginning and at the end of the study to compare the differences between the beginning and the end of the interventions taken. Those are RM-5-FM Motivation for Exercise and Doing Sports, WEIMS-Work Extrinsic and Intrinsic Motivation Scale, PEQ-Psychological Empowerment, and PCQ- Psychological Capital Questionnaire.

3.3 Description of the intervention group

The intervention group in this study consisted of participants who received the physical activity intervention, education related to it, motivational content, and articles related to health and movement. Those participants were provided with resources and support to engage in physical activity during their leisure time, whenever it's suitable for them. The intervention group received the intervention for a specified period, after which their motivation and some other factors related to productivity, were compared to those from the beginning of the research.

3.4 Population and Sample

3.4.1 Selection criteria

The selection criteria for participants in this study include:

Employees who work in sedentary jobs in an office setting.

Employees who are at least 18 years old.

Employees who can engage in physical activity without any health-related concerns or restrictions.

Employees who are willing to participate voluntarily and provide informed consent.

The participants were recruited through an announcement sent to all employees within the target company. The announcement included information about the study, the selection criteria, and the benefits of participation. Interested employees were required to complete a screening questionnaire to ensure they meet the selection criteria.

3.4.2 Sample size determination

The sample size for this study was determined based on the power analysis, which took into account the effect size of the intervention, the significance level, and the desired power level.

The selection criteria for participants will include:

Age: Participants must be between the ages of 18 and 65 years old.

Employment status: Participants must be full-time employees of the company.

Physical activity level: Participants must be willing to engage in 150 minutes of moderate-to-vigorous physical activity per week.

Health status: Participants must have no history of cardiovascular disease or musculoskeletal disorders that would preclude them from engaging in physical activity.

Consent: Participants must provide informed consent to participate in the study.

The total sample size was 20 participants.

3.4.3 Recruitment process

The recruitment process involved reaching out to organizations that are willing to participate in the study. The organizations were selected based on their willingness to allow their employees to participate and meet the following criteria:

The organization must have at least 50 employees.

The organization must have an office environment where employees work at a desk for at least 6 hours a day.

The organization must not have an existing physical activity program in place.

The organization must be willing to allow their employees to participate in the study

Once organizations was identified, an email explaining the study and the requirements for participation was sent. Employees who meet the eligibility criteria were invited to participate in the study. Participation in the study was voluntary, and participants were informed of their rights and the risks and benefits associated with participating in the study.

3.4.4 Informed consent process

The informed consent process is a critical aspect of research involving human participants. It is important to ensure that participants fully understand the purpose of the study, their role in it, and the potential risks and benefits associated with their participation. In this study, the following steps were taken to ensure that the informed consent process is properly conducted:

Information Sheet: A detailed information sheet was provided to all potential participants outlining the purpose of the study, the procedures involved, and any potential risks or benefits associated with participation. The information sheet also included details on the data collection methods, data storage, and data sharing procedures.

Consent Form: Participants were asked to sign a written consent form indicating their willingness to participate in the study. The consent form was based on the information provided in the information sheet.

Confidentiality and anonymity: Participants were informed that their responses were kept confidential and anonymous and that their personal information were kept secure and not shared with any third party.

Voluntary participation: Participants were informed that their participation is voluntary and that they have the right to withdraw from the study at any time without penalty.

Contact Information: The researcher's contact information was provided to participants in case they have any questions or concerns regarding the study.

The informed consent process was conducted by the researcher prior to the commencement of the study, and participants had the opportunity to ask any questions or seek clarification before providing their consent. The signed consent forms were securely stored by the researcher.

3.5 Procedures for Survey Administration

The procedures for survey administration will involve several steps, including:

Pretesting: Before the survey is administered to the participants, it was pretested on a small sample of individuals who are similar to the target population. This helped

identify any issues with the survey instrument, such as ambiguous or confusing questions, that need to be addressed before the actual survey was conducted.

Recruitment: Participants were recruited through the company's intranet newsletter channel, via email. The recruitment materials included information about the purpose of the study, eligibility criteria, and incentives for participation. After they have decide to apply a live meeting was organized with the HR department to explain everything in more detail and ensure they voluntarily choose whether to participate or not due to research benefits and obligations.

Consent process: Participants were required to give informed consent before they can participate in the study. The consent form included information about the study's purpose, procedures, risks, and benefits, as well as their rights as participants.

Survey administration: The survey was administered electronically, using an online survey tool Google Forms. Participants were provided with a link to the survey, which they completed at their convenience.

Follow-up: Participants who do not complete the survey within a specified time frame were sent reminders via email or text message.

3.6 Intervention Procedures

3.6.1 Detailed description of the intervention for the focus group

The intervention consisted of a 9-week program aimed at increasing physical activity levels and empowerment in the workplace. The program consisted of the following components:

Education sessions: Participants attended one education session per week led by a physical therapist. These sessions covered topics such as the benefits of physical activity, how to exercise safely and how to incorporate physical activity into the workday.

Exercise sessions: Participants had access to on-line functional training sessions, 30 minutes each. They were encouraged to participate in at least three 30-minute exercise sessions per week during their leisure time and at least two 30-minute brisk walking sessions per week.

Tracking and feedback: Participants were asked to claim their physical activity levels at the end of each week. The data was used to provide individualized feedback and encourage goal setting.

Social support: Participants were encouraged to find someone to join them in the exercise to provide social support and accountability throughout the program. The intervention group also had access to a physical therapist who provided ongoing support and encouragement throughout the program.

Corporate Walking Challenge. Besides given tasks, participants were be encouraged to choose someone for whom they want to walk in a 30-day period. Encouraging empathy, compassion, team building, and additional motivation the one who gathers the most steps were awarded with entry fee for the Wings for Life World Running Event.

3.6.2 Intervention rationale

The intervention rationale is based on the findings from the literature review that physical activity interventions have the potential to enhance productivity and empowerment in the workplace. The intervention aimed to promote physical activity among employees by providing them with a range of resources and support.

The intervention was designed to include both individual-level and group-level components. At the individual level, participants were provided with access to a coach whenever they need to, to set goals, track their progress, and receive feedback and support. At the group level, participants attended weekly group exercise classes led by a physical therapist.

The intervention was designed to be adaptable to the individual needs and preferences of participants. Participants were encouraged to choose activities and goals that align with their interests and abilities. The intervention was designed to be flexible, allowing participants to modify their goals and activities over time as needed.

The overall goal of the intervention is to increase participants' physical activity levels and enhance their sense of empowerment and productivity in the workplace. By promoting physical activity and providing resources and support, the intervention is expected to improve participants' physical health, mental health, and overall well-being, leading to increased motivation, productivity, and job satisfaction.

3.6.3 Procedures for intervention delivery and monitoring

The intervention was delivered in the form of a 9-week physical activity program. The program consisted of weekly sessions of structured physical activity and exercise training delivered to the intervention group participants. The sessions were led by a certified physical therapist who has experience working with sedentary individuals.

The program consisted of a combination of aerobic and body weight training exercises, with a focus on increasing overall physical fitness and strength. The aerobic exercises included walking, jogging or running, while the resistance training exercises included functional body movements aiming to strengthen the core and reshape body mobility and flexibility. The program was designed to gradually increase the intensity

and duration of the exercises over the 9 weeks. The basis of functional training sessions is contralateral movement patterns, such as crawling, animal movements, and segments of yoga and Pilates. The goal was to reconnect the neuromuscular, sensory, and vestibular systems and influence brain functioning, cognition, and fitness levels.

Participants were provided with short weekly surveys to monitor their physical activity levels and progress throughout the program. The intervention was monitored by the exercise trainer to ensure adherence to the program and to address any issues or concerns that may arise during the program. The exercise trainer also provided regular feedback and encouragement to the participants to help them stay motivated and engaged in the program.

At the beginning of the study, a walking challenge was introduced for participants. They need to choose someone for whom they want to walk and collect steps in the following month. That person could be someone who they want to motivate and to push forward. As an award both of them, the walker and the person whose steps are collected won a participation in Wings for Life, a world running event.

Overall, the participants had an obligation to exercise but they could choose the most appropriate time for doing it. The education and knowledge they gained gave them a tool to become more independent over time to be able to exercise regularly every week, even when the program we finished. Throughout that journey of increasing the level of physical activity and education about it, they had access to a physical therapist/exercise moderator to avoid mistakes, solve issues or gain motivation.

3.7 Data Analysis

3.7.1 Explanation of the statistical analysis methods

The data collected from the questionnaires and short weekly surveys was analyzed using statistical methods to test the hypotheses. Descriptive statistics such as means, standard deviations, and frequencies were used to summarize the data using SSPS software (Statistical Package for the Social Sciences). To establish the difference between the observed indicators (individually for the observed questions and the total factors), initially and finally, the Wilcoxon test was performed.

Descriptive data of the subjects for the initial and final measurement of every questionnaire, arithmetic mean, standard deviation, interquartile range, and the minimum and maximum value for all observed variables and factors was measured. The factors were calculated according to the validated instructions for each questionnaire

The ranks of the Wilcoxon test were used to note any significant deviation in the occurrence of positive and negative ranks. To show the difference between the second and first measurement (shift) for the observed subjects and factors in the study the biggest and the lowest recorded shift was calculated. For the observed factors in the research (difference between the second and first measurement - shift) about the observed indicators, the Mann-Whitney U test and the Kruskal-Wallis test was used.

3.7.2 Description of the data preparation procedures

In this study, the data preparation procedures included cleaning and coding of the survey data. The survey data was coded and entered into a statistical software program for analysis. Any missing or erroneous data points were removed or corrected.

Descriptive statistics, such as means and standard deviations, were calculated for all variables. Transformations were made. Non-Parametric test Kruskal Wallis was used to compare the mean differences in productivity scores among intervention groups. Statistical significance was set at $p < 0.05$.

3.7.3 Explanation of the statistical tests to be used

The statistical analysis involved the use of descriptive statistics such as means, standard deviations, frequencies, and percentages to summarize the demographic and baseline characteristics of the participants. Additionally, inferential statistics such as independent samples from Man Whitney and Kruskal Wallis was used to examine the differences in physical activity levels and productivity among the intervention group. All statistical analyses were conducted using statistical software such as SPSS, with a significance level set at $p < .05$. To observe the difference and make a comparison between the initial and final testing, the Wilcoxon test for dependent causes (repeated measurements) was used.

3.8 Ethical Considerations

3.8.1 Discussion of ethical considerations in the study

The proposed study adhered to ethical guidelines in conducting research involving human participants. The following ethical considerations were addressed:

Informed Consent: Participants were informed of the purpose of the study, their rights, the risks and benefits of participation, and the procedures involved. They were asked to sign a consent form before participating in the study.

Confidentiality: Participants' personal information was kept confidential and stored securely. Only the research team had access to the data collected.

Voluntary Participation: Participation in the study was completely voluntary. Participants have had the right to withdraw from the study at any time without penalty.

Risk Mitigation: The study not involved any physical or psychological risks to participants. Any potential risks were minimized through careful design and procedures.

Debriefing: Participants were provided with information about the study results and conclusions upon completion of the study.

The study also complied with any relevant institutional and governmental regulations regarding the ethical conduct of research involving human participants.

3.8.2 Description of procedures to protect participants' confidentiality and privacy

In this study, ethical considerations were of utmost importance. The following procedures were in place to protect participants' confidentiality and privacy:

Informed Consent: Participants were provided with an informed consent form detailing the purpose of the study, what their participation entails, the potential risks and benefits, and their right to withdraw at any time. Participants were required to sign the form before being included in the study.

Confidentiality: All data collected from participants was kept confidential. Participants' identifying information, such as their name, contact information, and other personal details, was kept separate from the research data. The research team used assigned identification numbers to ensure participant anonymity. All research data was stored in a secure, password-protected database, with access limited only to the research team.

Privacy: Participants' privacy was respected throughout the study. Data collection and analysis was conducted in private settings, and participants were assured that their participation will not affect their employment status.

Debriefing: After the study completed, participants were provided with a debriefing form that explains the purpose of the study, the results, and their role in the

research. Participants also were allowed to ask questions and receive further information about the study.

Research Ethics Approval: The study was reviewed and approved by an institutional research ethics committee to ensure that all ethical standards are met.

By following these procedures, the research team ensured that the study is conducted in an ethical and responsible manner, and that participants' rights and privacy are protected.

3.8.3 Explanation of procedures for data storage and disposal

To ensure the confidentiality and privacy of participants, all data collected was stored securely and only accessed by authorized personnel. The data was password-protected and stored on a password-protected computer. Any hard copies of the data was stored in a locked cabinet.

In addition, all identifiable information were removed from the data before analysis. Participants were assigned a unique ID number, and all data was coded accordingly. The code list linking participant names to ID numbers was stored separately from the data to ensure confidentiality.

At the end of the study, all data was securely disposed of by deleting all electronic files and shredding all hard copies.

3.9 Limitations and Delimitations

3.9.1 Discussion of potential limitations of the study

The limitations of a study refer to the factors that may impact the results or conclusions of the study, which may affect the generalizability and validity of the

findings. Delimitations, on the other hand, refer to the boundaries and scope of the study. In this section, the potential limitations and delimitations of the study will be discussed.

- Small sample size: As the study involved a single workplace and a small sample size, the findings may not be generalizable to other workplaces or populations.

- Self-reported data: Participants may not accurately report their physical activity levels or other survey responses, which may affect the validity of the findings.

- Social desirability bias: Participants may respond in a way that they believe is socially desirable rather than accurately reflecting their behaviours or opinions.

- Hawthorne effect: Participants may change their behaviour due to the awareness of being monitored or participating in an intervention, which may affect the accuracy of the results.

-Short research period: As the study last for only 2 months, and 2 months of follow-up, some key determinants such as work overload, sickness, private responsibilities, and time of the year in a given period, influenced the results

- Employee responsibility overload: Due to other predetermined events and assignments delivered by the Human Resource department, employees could decrease the level of pursuing the given intervention tasks

3.9.2 Explanation of delimitations in the study

Delimitations in a study refer to the boundaries and restrictions that limit the scope of the research. The delimitations of this study are as follows:

Sample Size: The study involved a limited number of participants due to resource constraints. As a result, the findings may not be generalizable to larger populations.

Time: The study was conducted over a limited period. The short duration may limit the extent to which the results can be generalized to longer-term interventions.

Focus group: The intervention was only administered to the focus group, which limited the ability to compare the effectiveness of the intervention across different groups.

Self-reported data: The study relied on self-reported data from participants, which might was subject to social desirability bias.

Context: The study was conducted in a specific workplace setting, which might limit the generalizability of the findings to other contexts.

Intervention type: The study only examined the effects of physical activity empowerment intervention on employee empowerment and productivity. Other types of interventions might have different effects on these outcomes.

Participant characteristics: The study only involved participants who met specific eligibility criteria, which might limit the generalizability of the findings to other populations.

3.10 Conclusion

3.10.1 Summary of the methodology section

The methodology for this study involved a quasi-experimental design with an intervention group. Participants were selected based on specific criteria and the sample size was determined using power analysis. Recruitment was done through the intranet by the HR department and informed consent was obtained from each participant. Data was collected using a survey instrument and the intervention procedures for the focus group

were described in detail. The statistical analysis methods and procedures for data preparation were explained, as well as the ethical considerations and procedures for protecting participants' confidentiality and privacy. Potential limitations of the study were discussed, as well as delimitations in the study.

3.10.2 Explanation of how the methodology aligns with the research questions and hypotheses

The proposed methodology aligned with the research questions and hypotheses by utilizing a quasi-experimental design with an intervention group to investigate the impact of a physical activity intervention on employee empowerment and productivity. The survey instrument was used to collect data, and statistical tests such as Kruskal-Wallis, Man Whitney, and Wilcoxon tests were used. Additionally, ethical considerations were taken into account, such as protecting participants' confidentiality and privacy and ensuring proper data storage and disposal. By addressing potential limitations and delimitations in the study, the proposed methodology strived to provide results that can contribute to the existing literature on physical activity interventions in the workplac

CHAPTER IV:

RESULTS

4.1 Introduction

In this chapter, there is a detailed description of results gained throughout the 9-week research period investigating the impact of physical activity on business productivity. The results include pre and post-test results before and after the research period of 9 weeks.

The first part of this section includes basic health information about participants such as present health status, pain, the present level of physical activity, some concerns they have regarding health, and their expectations about the study and program within.

The intention for the study was sent out in the form of an online message/email throughout the LinkedIn platform to at least 30 Human Resources Managers of various companies in Croatia with a detailed description of the study and all the obligations and benefits for the participants and the company as well.

Only one company with 230 employees accepted the proposal for conducting the study. An email has gone through their internal company newsletter about the research and all the necessary information about the study and their obligations and benefits if they decide to participate.

20 participants have applied. A written description was sent out to those who applied and a live meeting was organized to present the study in more detail and open space for questions and answers to inform them more about the study plan and hologram.

Since low participation rate, a more detailed survey about low participation rate was done at the end of this study.

4.2 Present health status of participants

At the beginning of the study, there were 20 participants. Two of them cancelled their participation in the first week due to private and professional obligations, and 4 of them did not fulfil all the questionnaires at the end of the study which means that data was incomplete and therefore it was not acceptable for further analysis. Of 14 participants that participated in the research project, 12 were women and 2 were men. In the following lines, there is their present health status description.

They were active two to three days of the week, approximately 120 minutes weekly. Table 1 shows an answer for the question ‘on average how often and how long do you exercise? (How many days per week and how many minutes per day)

Table 1. Exercise habits

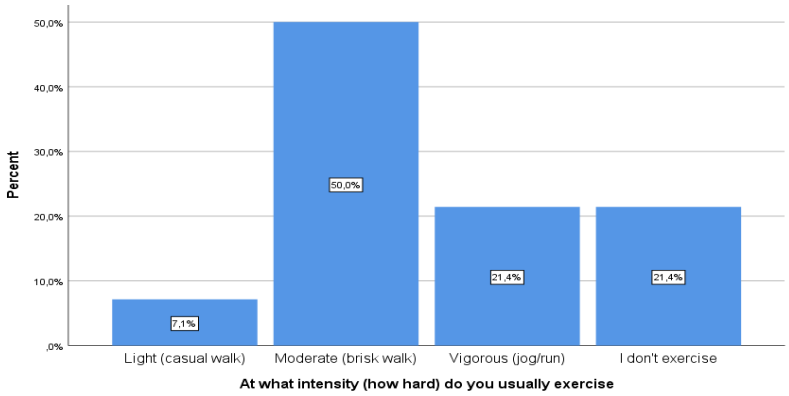
	N
0	1
0/0	1
1.1	1
2 days - 40 minutes	1
2 days per week (30-45 min per day)	1
2 days pre week, 2 hours per week	1
2 days, 45 min	1
2 x 60 min	1
2-3 times per week, 90 minutes daily	1
3 times per week, 30 minutes daily	1
3 days per week (functional training, 1h per training) and after this I dance folclore (2h per training) also 3 days per week Sometimes I work out at home on free days (some short bodyweight trainings or yoga)	1
5 days, minimal 1 hour	1
about three days a week for 30-45 min	1
None	1

When asked at what intensity (how hard) do you usually exercise, 7.1% stated Light (casual walk), 50.0% stated Moderate (brisk walk), 21.4% stated Vigorous (jog/run), while 21, 4% state I don't exercise.

Table 2. Exercise Intensity

		N	%
At what intensity (how hard) do you usually exercise	Light (casual walk)	1	7.1%
	Moderate (brisk walk)	7	50.0%
	Vigorous (jog/run)	3	21.4%
	I don't exercise	3	21.4%
	Total	14	100,0 %

Figure 1. Exercise Intensity



For the question Do you often feel tired, fatigued, or sleepy during the daytime, even after a "good" night's sleep, 42.9% say yes, while for the question do you have people in your life who negatively affect your efforts to live in a healthy lifestyle 28.6% say yes. (Table 4)

Table 4. Possible Influence on Exercise Habit

		N	%
Do you often feel tired, fatigued, or sleepy during the daytime, even after a "good" night's sleep	Yes	6	42.9%
	No	8	57.1%
	Total	14	100.0 %
Do you have people in your life who negatively affect your efforts to live in a healthy lifestyle	Yes	4	28.6%
	No	10	71.4%
	Total	14	100.0 %

Some other concerns that they have about health and healthy habits are shown in the Table 5.

Table 5. Individual Concerns about health

	N
/	1
Diastasis after childbirth	1
I don't eat healthy! Don't eat breakfast during the work week, and I gained cca 7-8 kg that boders me.	1
I should excercise.	1
I do have some other issues that I want to sort out	1
Just back pain	1
Nothing	1
Nothing	1
No	1
No special concerns	1
None	1
Smoking is one of concerns.	1
Some genetic issues (cholesterol, giht) . I am not active but have high potential to be soon	1
That it will get worse	1

When asked How concerned are you about the impact of your weight on your health, 14.3% stated Very unconcerned, 21.4% stated Unconcerned, 35.7% stated Neutral, 21.4% stated Concerned, while 7.1% stated Very Concerned, for the question Would you like to change your weight, 71.4% said yes.

Table 6. Weight Concerns

		N	%
How concerned are you about the impact of your weight on your health	Very unconcerned	2	14.3%
	Unconcerned	3	21.4%
	Neutral	5	35.7%
	Concerned	3	21.4%
	Very Concerned	1	7.1%
	Total	14	100.0 %
Would you like to change your weight	Yes	10	71.4%
	No	4	28.6%
	Total	14	100.0 %

Figure 2. Weight Concerns

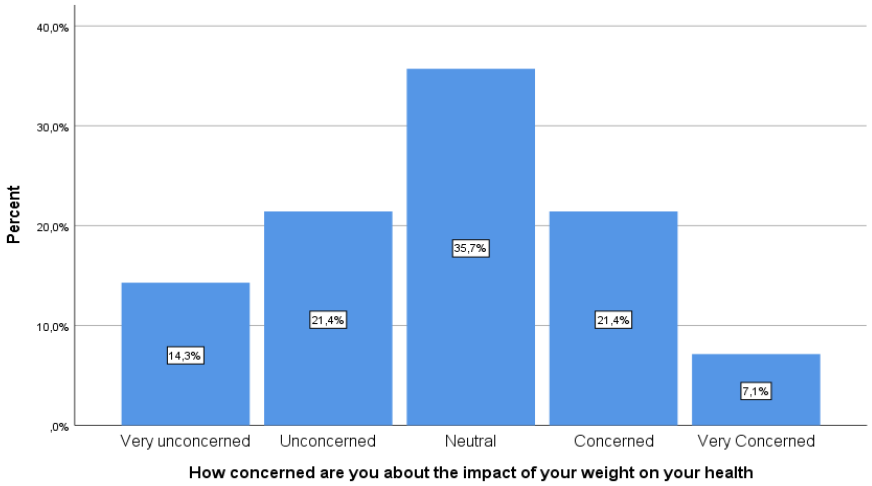


Table 7. shows the respondents' answers to the question If you have any pain or problem describe the area where you are experiencing pain/symptoms.

Table 7. Pain description

	N
	1
Feet	1
I have a problem with the cervical spine, pain, nerve inflammation, the fingers of my left hand were tingling, so I was in Ligament Clinic for therapy. Itś better now.	1
Knees	1
Left knee	1
Lower and middle back	1
Lower back	2
Lower back pain	1
Main issues is problem with muscles in the neck area and shoulder blades (that lead to some nerve issues in the face/head), some issues with right arm	1

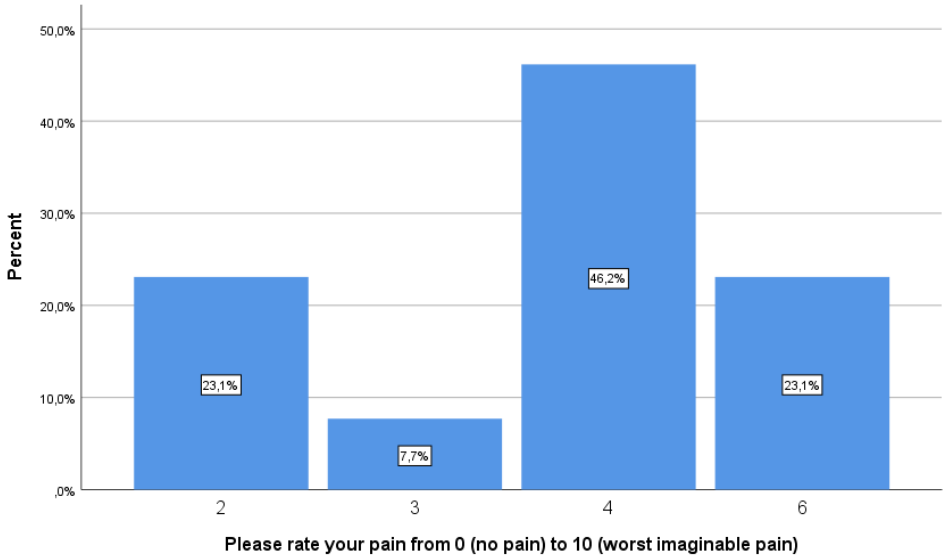
Neck and shoulders, foot and leg cramp	1
Sometimes low back pain	1
Sometimes I have back pain, that goes down my left leg and ends on my toes.	1
Sometimes lower back, hips and shoulders.	1

When asked, please rate your pain from 0 (no pain) to 10 (worst imaginable pain), 23.1% stated No pain, 7.7% stated 3, 46.2% stated 4, while 23.1% stated 6.

Table 8. Pain Scores VAS

		N	%
Please rate your pain from 0 (no pain) to 10 (worst imaginable pain)	No pain	0	0.0%
	2	3	23.1%
	3	1	7.7%
	4	6	46.2%
	5	0	0.0%
	6	3	23.1%
	7	0	0.0%
	8	0	0.0%
	9	0	0.0%
	Worst imaginable pain	0	0.0%

Figure 3. Pain Scores VAS



When asked How much does your pain/problem interfere with your Daily Activities, 58.3% stated None, while 41.7% stated 20%.

Table 9. Pain interference with daily activities

		N	%
How much does your pain/problem interfere with your Daily Activities	None	7	58.3%
	20%	5	41.7%
	40%	0	0.0%
	60%	0	0.0%
	80%	0	0.0%
	100% of the day	0	0.0%
	Total	12	100.0 %

Figure 4. Pain Interference with daily activities

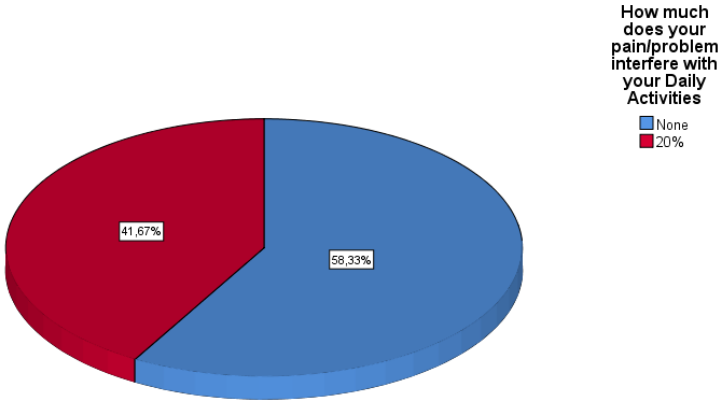


Table 10 shows the respondents' answers to the question Check all medical conditions you have (or were told you have).

Table 10. Medical conditions of participants

	N
	1
Allergies; Back pain; Headaches; Low Blood Pressure; Neck Pain; Neck Stiffness; Seizures; Stroke; Tingling in Arms/Hands	1
Allergies; Low Blood Pressure; Ringing in Ears; Skin Rashes; Thyroid Problems; Tingling in Arms/Hands; Tingling in Legs/Feet	1
Allergies; Low Exercise Level; Neck Pain; Neck Stiffness; Stomach or Intestinal Issues; Other Health Issues	1
Anemia; Disc problems	1
Anemia; Headaches; Neck Pain; Stomach or Intestinal Issues	1
Back pain; Neck Stiffness; Stomach or Intestinal Issues	1
Back pain; Other Health Issues	1
Back pain; Vision Problems	1
Headaches; Excessive Fatigue; Low Blood Pressure	1

Knee Pain	1
Knee Pain; Tingling in Arms/Hands; Vision Problems	1
Low Blood Pressure; Thyroid Problems; Vision Problems	1
Stomach or Intestinal Issues	1

When asked How optimistic are you that you'll get better after this program, 15.4% say Mildly optimistic, 30.8% say Fairly, 46.2% say Very Optimistic, while 7.7% say Extremely Optimistic.

Table 11. Optimism about getting better after the program

		N	%
How optimistic are you that you'll get better after this programme	Not at all	0	0.0%
	Mildly optimistic	2	15.4%
	Fairly	4	30.8%
	Very Optimistic	6	46.2%
	Extremely Optimistic	1	7.7%
	Total	13	100.0 %

Figure 5. Optimism about getting better after the program

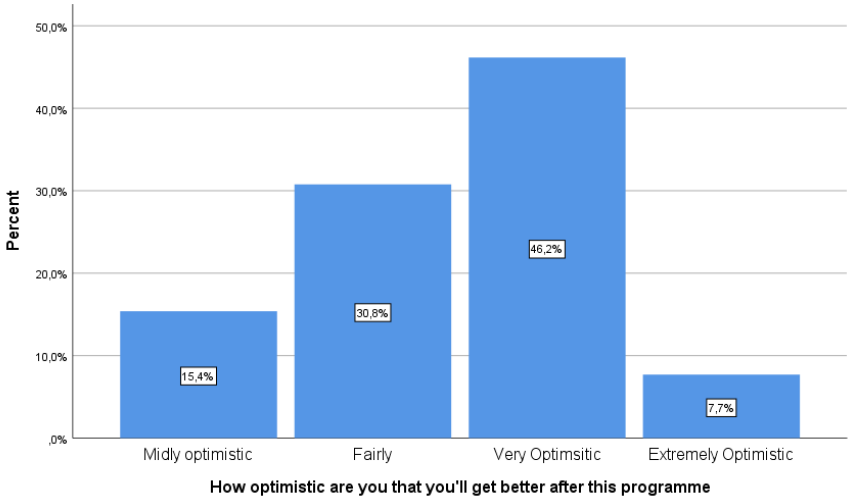


Table 12 shows the respondents' answers to the questions: What are some potential obstacles to you getting better and What are you expecting from this research exercise program.

Table 12. Obstacles and expectations

		N
What are some potential obstacles to you getting better		4
	-	1
	Fatigue	1
	Laziness	1
	Laziness.	1
	Lack of Motivation	1
	Me not doing the exercises	1
	I am not educated about it	1
	Not have motivation	1
	Nothing serious	1
	Some obligations, and being tired for anything, but I hope so that won't be problem	1
What are you expecting from this research exercise program		2
	Better condition	1
	Better posture	1
	Exercise habits, better physical and mental health	1
	I plan to be back (or in a right way) in shape as I was before having a baby, be more relaxed and happier with myself.	1
	Increase willingness to work out each day.	1
	How to prevent injuries and learn something new	1
	Learn how to exercise alone at home, and not give up	1
	To increase mobility, flexibility and strenght	1
	Create exercise habit	1
	To feel better and healthier	1

	To improve my health and to have fun. Also, to learn something new.	1
	To learn some new ways of movement that I will not get bored of, small things I can implement in my everyday life, motivation	1

4.3 Individual differences after two-month intervention program

After the period of two months a survey was done to make a comparison about pain level at the beginning and at the end of the study, their opinion about the program, fulfilled expectations about their personal improvement, knowledge gained and trainer/educator. Their achievements during the research period, possible recommendation of the program, reasons for applying for the program and motivation for doing so.

In the question do you still have that pain that you have mentioned before starting the program, 28.6% say Yes, 35.7% say No, while 35.7% say Sometimes, in the question If yes, how much does it hurt from 0 -10 (Please rate your pain from 0 (no pin) to 10 (worst imaginable pain) 16.7% states No pain, 8.3% states 1, 33.3% states 2, 16.7% states 3, 16 .7% state 4, while 8.3% state 5.

Table 14. Pain Information

		N	%
Do you still have that pain that you have mentioned before starting the program	Yes	4	28.6%
	No	5	35.7%
	Sometimes	5	35.7%
	Total	14	100.0%
If yes, how much does it hurt from 0-10 (Please rate your pain	No pain	2	16.7%
	1	1	8.3%
	2	4	33.3%

from 0 (no pin) to 10 (worst imaginable pain)	3	2	16.7%
	4	2	16.7%
	5	1	8.3%
	Total	12	100.0%

Figure 6. Pain information

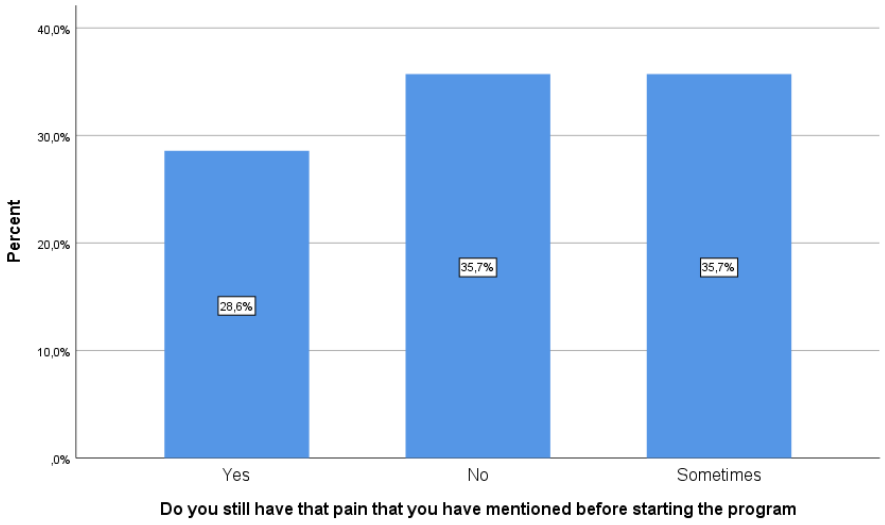


Figure 7. Pain after intervention program VAS scores

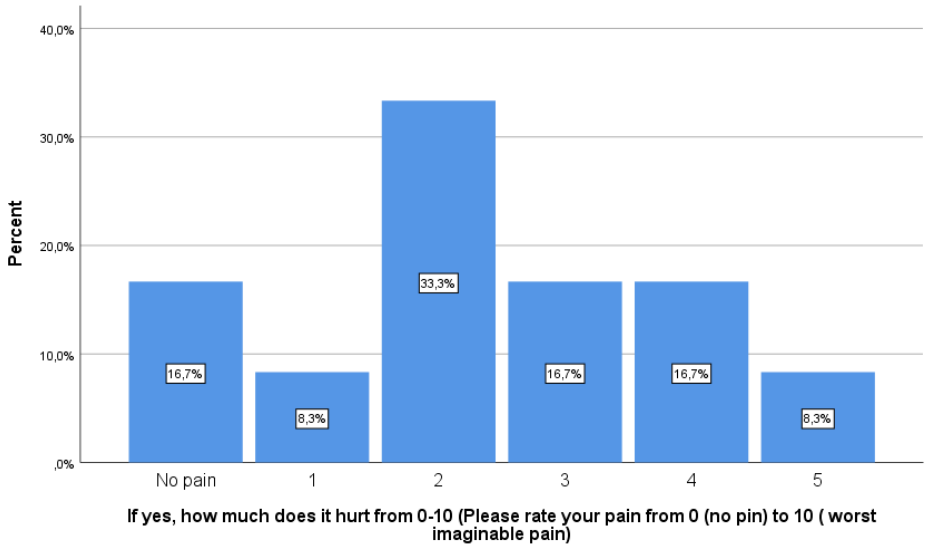


Table 15 shows the respondents' answers to the question: How would you briefly describe this online exercise program.

Table 15. Personal experience with the program

	N
Great, not losing time for travelling.	1
Home workout, bodyweight, stretching	1
I liked it, and happy to keep exercises for future "keeping in shape"!	1
I thought it was interesting. I didn't participate in the exercise program.	1
At the beginning it was very interesting due to learning new movements and exercise. First month was great. Later on, i felt a little bit monotony due to same exercise repeated, especially in those sessions in which we were doing the same exercise in many ways (for example cat, side cat, diagonal cat)	1
Nice and useful new experience, very professional and kind trainer, excellent idea to help people to create healthy habits!	1
Smart, motivational and effective	1
This program was great for me, I started very intensively, and I had muscle inflammation, after few weeks I got sick (cold, flu, sinus infection) a I mast stop with exercises. After that it was to difficult to start again, because I lost continuity. I will start again from the first training because it was really good.	1
Too demanding	1
Very effective, interesting and innovative. I learned a lot and it was really fun.	1
Very interesting and educational.	1
Very interesting, but unfortunately, I wasn't as active as I wanted to be	1
Well-designed, atypical exercises (at least for the average workout classes that I attended)	1
It was interesting to increase flexibility. The lack of diversity and cardio training. At least it is something that was lacking for me.	1

For the question do you consider yourself in a better condition right now, 42.9% said Yes, 21.4% said No, while 35.7% said the rest.

Table 16. Self-reported fitness status

		N	%
Do you consider yourself in a better condition right now	Yes	6	42.9%
	No	3	21.4%
	Other	5	35.7%
	Total	14	100.0%

Table 17 shows the other respondents' answers to the question do you consider yourself in a better condition right now.

Table 17. Self-reported fitness status 2

	N
	9
I didn't participate in the exercise program.	1
I learned a better way to recover and stretch.	1
I was in the first month of this trial when I was regularly exercising.	1
I will be when I finish all trainings	1
Similar to before, slightly better	1

If you look at the respondents' answers to the question *considering your expectations about your personal improvement before starting with the program and right now after the program has finished, are they higher or lower than expected. Please note the number for expected outcomes*, it can be seen that the arithmetic mean is 4.36 with a standard deviation of 1.39.

In the question *considering your expectations about knowledge gained before starting with program and right now after program has finished, are they higher or lower than expected. Please note the number for expected outcomes*, it can be seen that the arithmetic mean is 4.86 with a standard deviation of 1.03.

In the question *Considering your expectations about the educator/trainer before starting with program and right now after program has finished, are they higher or lower than expected. Please note the number for expected outcomes*, it can be seen that the arithmetic mean is 5.57 with a standard deviation of 1.28.

Table 18. Individual expectations and outcomes of the intervention program

		N	%	$\bar{x}$	Sd
Considering your expectations about your personal improvement before starting with program and right now after program has finished, are they higher or lower than expected. Please note the number for expected outcomes	Lower than expected	0	0.0%		
	2	1	7.1%		
	3	3	21.4%		
	4	4	28.6%		
	5	3	21.4%		
	6	2	14.3%		
	Higher than expected	1	7.1%		
	Total	14	100.0 %	4.36	1.39
Considering your expectations about knowledge gained before starting with program and right now after program has finished, are they higher or lower than expected. Please note the number for expected outcomes	Lower than expected	0	0.0%		
	2	0	0.0%		
	3	1	7.1%		
	4	4	28.6%		
	5	6	42.9%		

	6	2	14.3%		
	Higher than expected	1	7.1%		
	Total	14	100.0 %	4.86	1.03
Considering your expectations about the educator/trainer before starting with program and right now after program has finished, are they higher or lower than expected. Please note the number for expected outcomes	Lower than expected	0	0.0%		
	2	0	0.0%		
	3	1	7.1%		
	4	2	14.3%		
	5	3	21.4%		
	6	4	28.6%		
	Higher than expected	4	28.6%		
	Total	14	100.0 %	5.57	1.28

Table 19 shows the respondents' answers to the questions: What is the best you've achieved during this program, what is the most important thing you have learned during this program, to be completely honest, how much of given tasks you think you have accomplished (in percentage %).

Table 19. Individual achievements

		N
What is the best you've achieved during this program		1
	Being physically stronger	1
	Better posture and motivation to train further	1
	Consistency in this type of training	1
	Coordination	1
	I didn't participate in the exercise program	1
	I started to exercise	1

	Small flexibility improvment	1
	I feel relief in my back pain.	1
	New experience and some exercises	1
	I started to run again (3x per week) in exchange for cardio training session in the programe and hope to stay active even after the programme.	1
	That light and slow movements can be very difficult and effective.	1
	To be active more than I ever was with 2-3 workouts and 2 walks a week for the first month.	1
	Walking through various town parts and getting to know them better	1
What is the most important thing you have learned during this program	-	1
	All learned exercises.	1
	Iti s important to move, maybe just take a 30 min walk if we are noti n a mood for training	1
	That this kind of training isn't something that I would do in a long term	1
	Everything is possible	1
	How to exercise in 20-30 minutes to achieve strength and to make it a habit	1
	How to train correctly	1
	I didn't participate in the exercise program.	1
	I don’t like exercising online	1
	New flexibility and mobility exercises	1
	Online self-paced is not for me	1
	That I am in better shape that I thought.	1
	To listen my body :) and that it is capable of so much more than we think	1
	When we work patiently and diligently, everything is possible.	1
To be completely honest, how much of given tasks you think you have accomplished (in percentage %)	12	1
	30	1
	35	1
	5-10%	1
	50%	2
	60%	2

	65	1
	65-70 %	1
	70%	1
	75%	1
	90%	1
	I didn't participate in the exercise program. 0%	1

When asked the question Would you recommend this kind of program, 85.7% said Yes, 7.1% said No, while 7.1% said Other.

Table 20. Possible recommendation of the program

		N	%
Would you recommend this kind of program	Yes	12	85.7%
	No	1	7.1%
	Other	1	7.1%
	Total	14	100.0%

Figure 7. Possible recommendation of the program

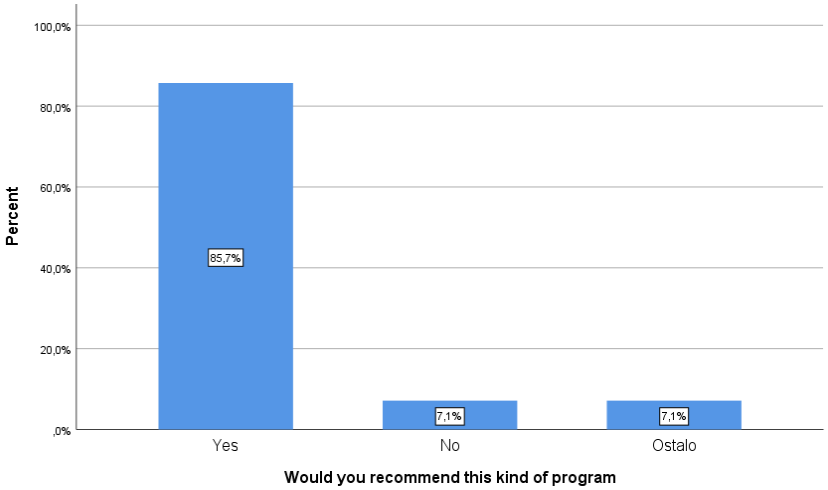


Table 21 shows the other respondents' answers to the question: Would you recommend this kind of program.

Table 21. Possible recommendation of the program 2

	N
	13
Of course, trainings and the coach are great if someone is interested in this type of training	1

Table 22 shows the respondents' answers to the question: What was the most important reason for applying to the program.

Table 22. Reason for participants' application to the research program

	N
I wanted to improve my fitness level; I wanted to create a habit	1
I wanted to improve my fitness level; I wanted to improve health and reduce pain	1
I wanted to improve my fitness level; I wanted to improve health and reduce pain; I wanted to create a habit	1
I wanted to improve my fitness level; I wanted to learn something new; I wanted new experience; I wanted to improve health and reduce pain	1
I wanted to improve my fitness level; I wanted to learn something new; I wanted new experience; I wanted to improve health and reduce pain; I wanted to create a habit	2
I wanted to improve my fitness level; I wanted to learn something new; I wanted new experience; I wanted to improve health and reduce pain; I wanted to create a habit; i wanted to lose weight	2
I wanted to improve my fitness level; I wanted to learn something new; I wanted to create a habit; I wanted to lose weight	1

I wanted to improve my fitness level; I wanted to learn something new;I wanted to improve health and reduce pain; I wanted to create a habit	2
I wanted to learn something new	1
I wanted to learn something new; I wanted to improve health and reduce pain	1
I wanted to support the researcher because I think she has a great and beautiful vision	1

		N	%
What was the most important reason for applying to the program: I wanted to improve my fitness level	Yes	11	78.6%
	No	3	21.4%
	Total	14	100.0 %
What was the most important reason for applying to the program: I wanted to learn something new	yes	10	71.4%
	no	4	28.6%
	Total	14	100.0 %
What was the most important reason for applying to the program: I wanted new experience	yes	5	35.7%
	no	9	64.3%
	Total	14	100.0 %
What was the most important reason for applying to the program: I wanted to improve health and reduce pain	yes	10	71.4%
	no	4	28.6%
	Total	14	100.0 %
What was the most important reason for applying to the program: I wanted to create a habit	yes	9	64.3%
	no	5	35.7%
	Total	14	100.0 %
What was the most important reason for applying to the program: i wanted to lose weight	yes	3	21.4%
	no	11	78.6%
	Total	14	100.0 %
	ne	14	100.0 %

What was the most important reason for applying to the program: I wanted to make an employer happy	Total	14	100.0 %
What was the most important reason for applying to the program: The rest	yes	1	7.1%
	no	13	92.9%
	Total	14	100.0 %

Figure 8. Reason for participants' application to the research program

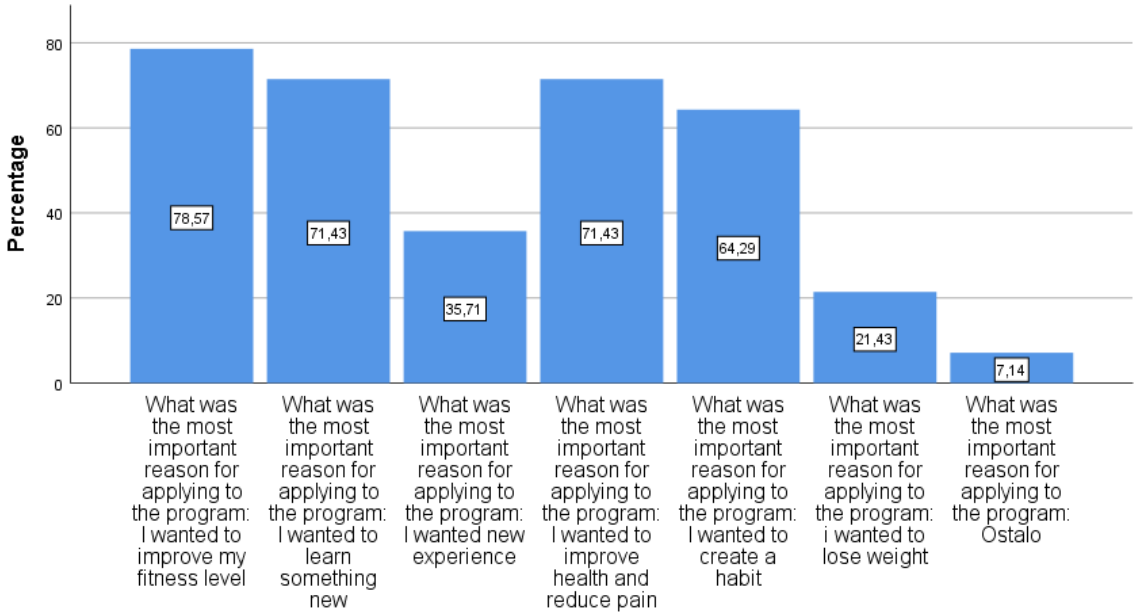


Table 23 shows the respondents' answers to the questions: What was the biggest motivation for doing it, did anyone from your surroundings want to exercise because you are.

Table 23. Motivation for application

		N
	Improvement of Health	1

What was the biggest motivation for doing it	Improvement of Health; Possibility that I will create a habit	2
	Knowledge to be Gained; Improvement of Health	1
	Knowledge to be Gained; Improvement of Health; Other participants Motivate Me; Possibility that I will create a habit	1
	Possibility that I will create a habit	3
	Something else	1
	Trainer / Educator	1
	Trainer / Educator; Improvement of Health	1
	Trainer / Educator; Improvement of Health; Something else	1
	Trainer / Educator; Knowledge to be Gained; Improvement of Health; Possibility that I will create a habit	2
Did anyone from your surroundings wanted to exercise because you are	Yes, my sister started to excercise few days after me	1
	I didn't participate in the exercise program.	1
	I have told a few friends about the program and promised to send them videos because they were interested in this kind of activity.	1
	My mother :)	1
	No	1
	No	1
	No	5
	Yes	1
	Yes	1
	Yes, my son.	1

Two months after the research has been finished short survey was sent to the participants in order to examine adopted healthy habits. Figure 9 shows answers for the question Could you say that you have gain or adopted some new healthy habits?

Figure 9. Adoption of health habits

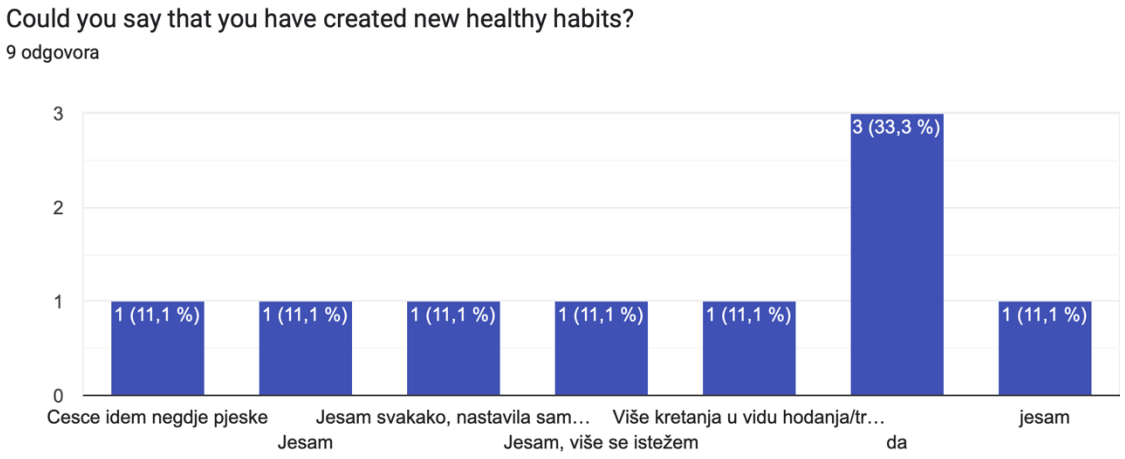


Figure 10 shows the answers for the question „Do you walk more now than before the research has been started

Figure 10. Walking habits after two-month period

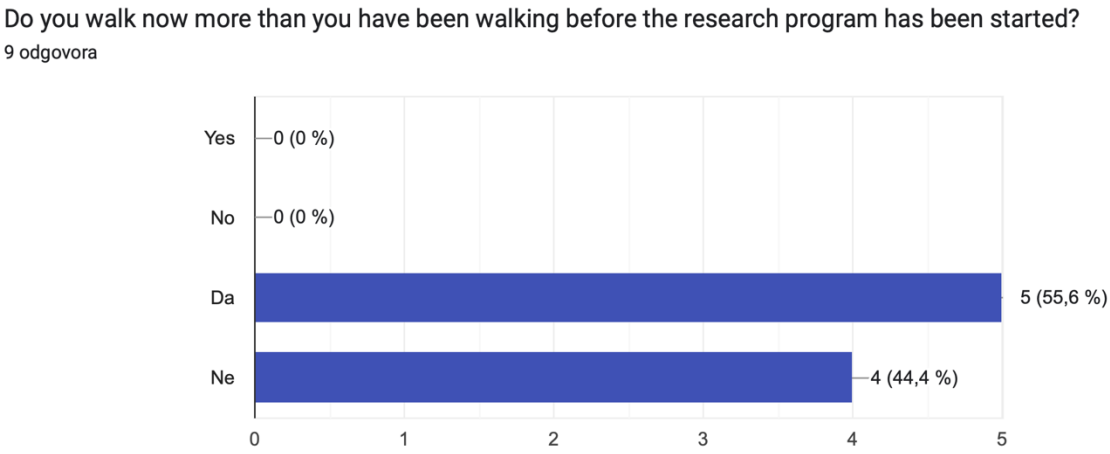
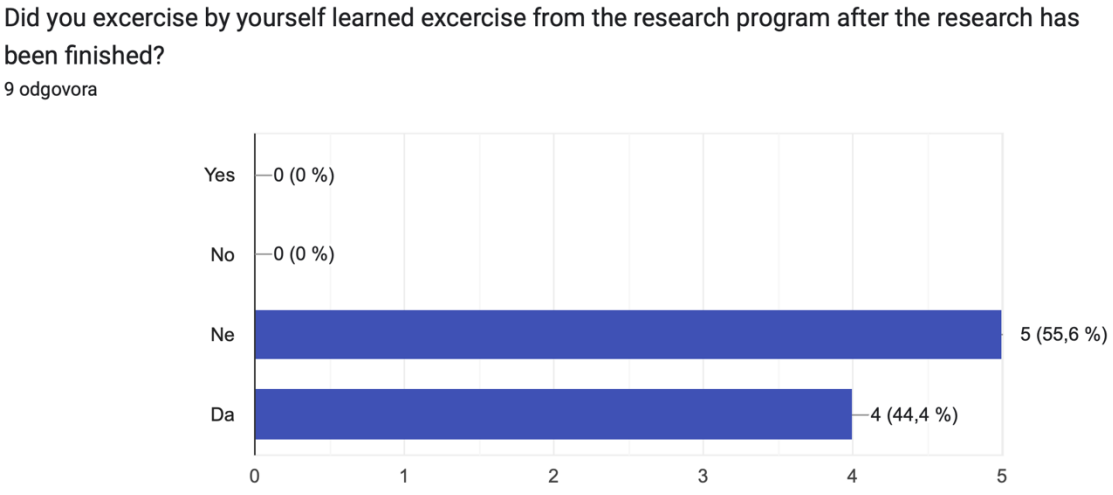


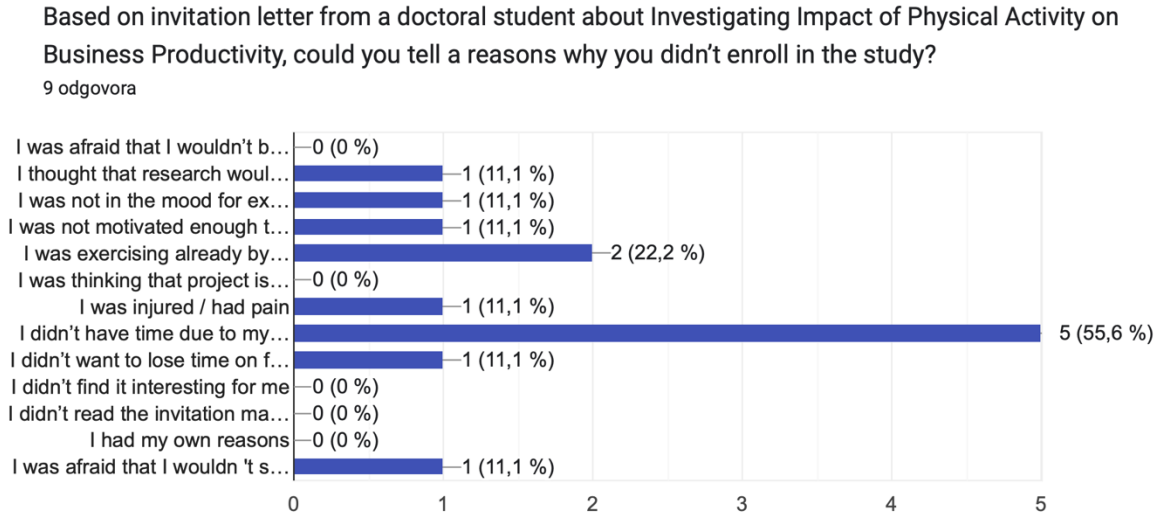
Figure 11. shows an answers for the question *Have you been excercise learned excercise after the reseacrh has been finished?*

Figure 11. Exercise routine habit formation



Due to small participation rate, a short survey was sent to those employees who didn't apply to investigate the reasons for not participation. Figure 12. shows the answers for the reasons of not applying for the physical activity program.

Figure 12. Low participation rate reasons



4.4 Pre-test and post-test difference in the observed indicators

In order to establish the difference between the observed indicators (individually for the observed questions and for the total factors), initially and finally the Wilcoxon test will be performed. The summary of all factors observed could be seen at Figure 13 and figure 14. The more detailed description is as follows.

Figure 13. The difference between initial and final results by factors observed

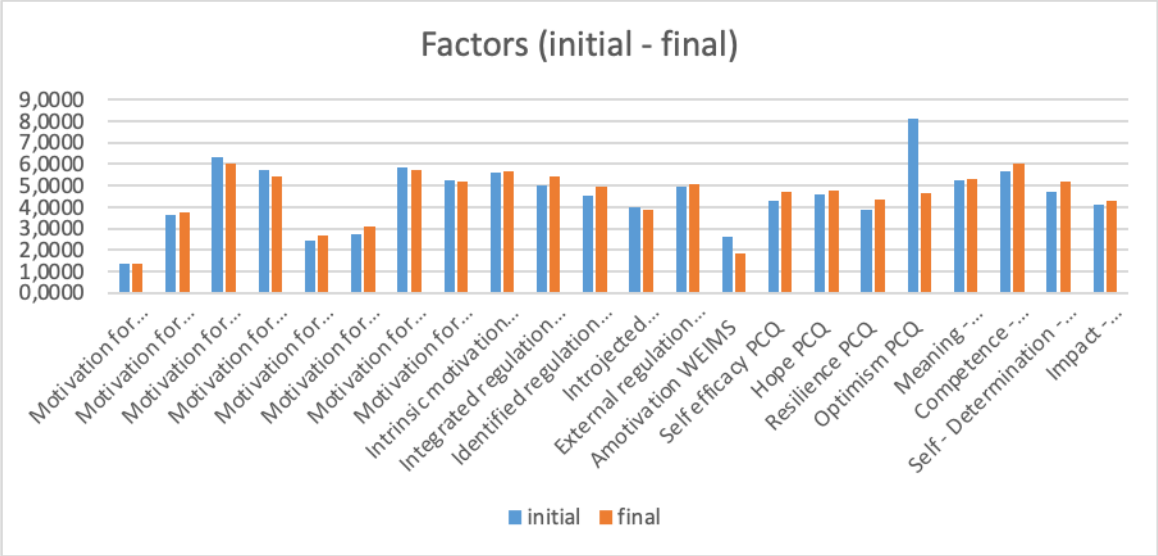


Figure 14. The Mean (Initial and Final factors observed)

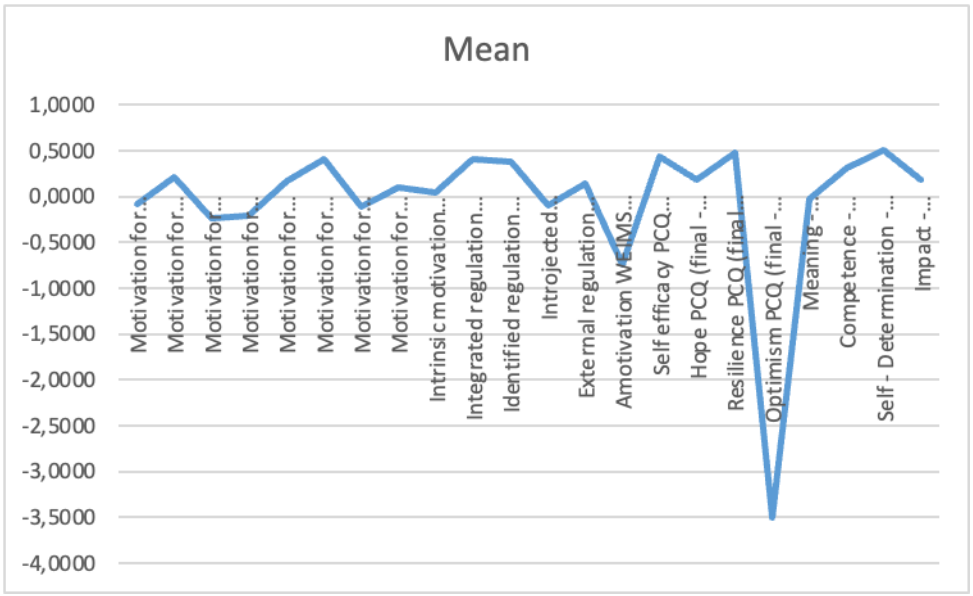


Table 24 shows the descriptive data of the subjects for the initial and final measurement of RM4-FM, from the attached table you can read the value of the arithmetic mean, standard deviation, interquartile range, and the minimum and maximum value for all observed variables.

Table 24. Descriptive Statistics Motivation for Physical Activity RM4-FM

	N	$\bar{x}$	Sd	Min	Max	Percentiles		
						25th	50th (Median)	75th
I try, or would like to try, to be physically active regularly because I would feel bad about myself I did not (initial)	13	5.62	1.193	4	7	4.50	6.00	7.00
I try, or would like to try, to be physically active regularly because others would be angry at me if I did not (initial)	13	1.46	.967	1	4	1.00	1.00	1.50

I try, or would like to try, to be physically active regularly because I enjoy physical activities (initial)	13	5.62	1.387	3	7	5.00	6.00	7.00
I try, or would like to try, to be physically active regularly because I would feel like a failure if I did not (initial)	13	3.69	1.548	2	7	2.00	4.00	5.00
I try, or would like to try, to be physically active regularly because I feel as if it's the best way to help myself (initial)	13	6.00	1.225	3	7	5.00	6.00	7.00
I try, or would like to try, to be physically active regularly because people would think I'm weak person if I did not (initial)	13	1.54	1.450	1	6	1.00	1.00	1.00
I try, or would like to try, to be physically active regularly because I feel as If I have no choice about being active, others make me do it (initial)	13	1.62	1.446	1	6	1.00	1.00	1.50
I try, or would like to try, to be physically active regularly because it is a challenge to accomplish my goal (initial)	13	5.46	1.664	2	7	4.00	6.00	7.00
I try, or would like to try, to be physically active regularly because I believe physical activity helps me feel better (initial)	13	6.85	.376	6	7	7.00	7.00	7.00
I try, or would like to try, to be physically active regularly because it's fun (initial)	13	5.54	1.613	2	7	4.50	6.00	7.00
I try, or would like to try, to be physically active regularly because I worry, I would get into trouble with others if I did not (initial)	13	1.08	.277	1	2	1.00	1.00	1.00
I try, or would like to try, to be physically active regularly because it feels important to me personally to accomplish this goal (initial)	13	5.77	1.235	3	7	5.00	6.00	7.00
I try, or would like to try, to be physically active regularly because I feel quilty If I am not regularly active (initial)	13	3.77	1.423	1	6	2.50	4.00	5.00

I try, or would like to try, to be physically active regularly because I want others to acknowledge that I am doing what I have been told I should do (initial)	13	1.38	.650	1	3	1.00	1.00	2.00
I try, or would like to try, to be physically active regularly because it is interesting see my own improvement (initial)	13	6.38	.870	5	7	5.50	7.00	7.00
I try, or would like to try, to be physically active regularly because feeling healthier is important value for me (initial)	13	6.62	.506	6	7	6.00	7.00	7.00
I try, or would like to try, to be physically active regularly because I would feel bad about myself I did not (final)	14	5.79	1.122	3	7	5.00	6.00	7.00
I try, or would like to try, to be physically active regularly because others would be angry at me if I did not (final)	14	1.36	.633	1	3	1.00	1.00	2.00
I try, or would like to try, to be physically active regularly because I enjoy physical activities (final)	14	5.43	1.284	3	7	4.00	6.00	6.25
I try, or would like to try, to be physically active regularly because I would feel like a failure if I did not (final)	14	3.43	1.950	1	6	1.75	3.50	5.25
I try, or would like to try, to be physically active regularly because I feel as if it's the best way to help myself (final)	14	5.71	1.139	4	7	4.75	6.00	7.00
I try, or would like to try, to be physically active regularly because people would think I'm weak person if I did not (final)	14	1.29	.611	1	3	1.00	1.00	1.25
I try, or would like to try, to be physically active regularly because I feel as If I have no choice about being active, others make me do it (final)	14	1.50	.760	1	3	1.00	1.00	2.00
I try, or would like to try, to be physically active regularly because it is a challenge to accomplish my goal (final)	14	4.86	1.406	2	7	4.00	5.00	6.00

I try, or would like to try, to be physically active regularly because I believe physical activity helps me feel better (final)	14	6.36	.745	5	7	6.00	6.50	7.00
I try, or would like to try, to be physically active regularly because it's fun (final)	14	5.36	1.151	3	7	4.75	5.50	6.00
I try, or would like to try, to be physically active regularly because I worry, I would get into trouble with others if I did not (final)	14	1.14	.363	1	2	1.00	1.00	1.00
I try, or would like to try, to be physically active regularly because it feels important to me personally to accomplish this goal (final)	14	5.50	1.019	4	7	5.00	5.00	6.25
I try, or would like to try, to be physically active regularly because I feel quilty If I am not regularly active (final)	14	4.43	1.869	1	6	2.75	5.50	6.00
I try, or would like to try, to be physically active regularly because I want others to acknowledge that I am doing what I have been told I should do (final)	14	1.36	.842	1	4	1.00	1.00	1.25
I try, or would like to try, to be physically active regularly because it is interesting see my own improvement (final)	14	6.00	1.038	4	7	5.00	6.00	7.00
I try, or would like to try, to be physically active regularly because feeling healthier is important value for me (final)	14	6.50	.650	5	7	6.00	7.00	7.00

Table 25. Ranks Motivation for Physical Activity RM4-FM

		N	Mean Rank	Sum of Ranks
I try, or would like to try, to be physically active regularly because I would feel bad about myself I did not (final) - I try, or would like to try, to be physically active regularly because I would feel bad about myself I did not (initial)	Negative Ranks	3[a]	4.00	12.00
	Positive Ranks	6[b]	5.50	33.00
	Ties	4[c]		
	Total	13		

I try, or would like to try, to be physically active regularly because others would be angry at me if I did not (final) - I try, or would like to try, to be physically active regularly because others would be angry at me if I did not (initial)	Negative Ranks	2[a]	3.75	7.50
	Positive Ranks	3[b]	2.50	7.50
	Ties	8[c]		
	Total	13		
I try, or would like to try, to be physically active regularly because I enjoy physical activities (final) - I try, or would like to try, to be physically active regularly because I enjoy physical activities (initial)	Negative Ranks	3[a]	4.83	14.50
	Positive Ranks	4[b]	3.38	13.50
	Ties	6[c]		
	Total	13		
I try, or would like to try, to be physically active regularly because I would feel like a failure if I did not (final) - I try, or would like to try, to be physically active regularly because I would feel like a failure if I did not (initial)	Negative Ranks	6[a]	4.75	28.50
	Positive Ranks	4[b]	6.63	26.50
	Ties	3[c]		
	Total	13		
I try, or would like to try, to be physically active regularly because I feel as if it's the best way to help myself (final) - I try, or would like to try, to be physically active regularly because I feel as if it's the best way to help myself (initial)	Negative Ranks	7[a]	4.07	28.50
	Positive Ranks	2[b]	8.25	16.50
	Ties	4[c]		
	Total	13		
I try, or would like to try, to be physically active regularly because people would think I'm weak person if I did not (final) - I try, or would like to try, to be physically active regularly because people would think I'm weak person if I did not (initial)	Negative Ranks	2[a]	2.25	4.50
	Positive Ranks	1[b]	1.50	1.50
	Ties	10[c]		
	Total	13		
I try, or would like to try, to be physically active regularly because I feel as If I have no choice about being	Negative Ranks	2[a]	2.75	5.50
	Positive Ranks	2[b]	2.25	4.50
	Ties	9[c]		

active, others make me do it (final) - I try, or would like to try, to be physically active regularly because I feel as If I have no choice about being active, others make me do it (initial)	Total	13		
I try, or would like to try, to be physically active regularly because it is a challenge to accomplish my goal (final) - I try, or would like to try, to be physically active regularly because it is a challenge to accomplish my goal (initial)	Negative Ranks	7[a]	4.71	33.00
	Positive Ranks	3[b]	7.33	22.00
	Ties	3[c]		
	Total	13		
I try, or would like to try, to be physically active regularly because I believe physical activity helps me feel better (final) - I try, or would like to try, to be physically active regularly because I believe physical activity helps me feel better (initial)	Negative Ranks	5[a]	3.60	18.00
	Positive Ranks	1[b]	3.00	3.00
	Ties	7[c]		
	Total	13		
I try, or would like to try, to be physically active regularly because it's fun (final) - I try, or would like to try, to be physically active regularly because it's fun (initial)	Negative Ranks	6[a]	3.58	21.50
	Positive Ranks	2[b]	7.25	14.50
	Ties	5[c]		
	Total	13		
I try, or would like to try, to be physically active regularly because I worry I would get into trouble with others if I did not (final) - I try, or would like to try, to be physically active regularly because I worry I would get into trouble with others if I did not (initial)	Negative Ranks	0[a]	.00	.00
	Positive Ranks	1[b]	1.00	1.00
	Ties	12[c]		
	Total	13		
I try, or would like to try, to be physically active regularly because it feels important to me personally to	Negative Ranks	6[a]	4.75	28.50
	Positive Ranks	3[b]	5.50	16.50
	Ties	4[c]		

accomplish this goal (final) - I try, or would like to try, to be physically active regularly because it feels important to me personally to accomplish this goal (initial)	Total	13		
I try, or would like to try, to be physically active regularly because I feel quilty If I am not regularly active (final) - I try, or would like to try, to be physically active regularly because I feel quilty If I am not regularly active (initial)	Negative Ranks	2[a]	4.25	8.50
	Positive Ranks	6[b]	4.58	27.50
	Ties	5[c]		
	Total	13		
I try, or would like to try, to be physically active regularly because I want others to acknowledge that I am doing what I have been told I should do (final) - I try, or would like to try, to be physically active regularly because I want others to acknowledge that I am doing what I have been told I should do (initial)	Negative Ranks	2[a]	1.75	3.50
	Positive Ranks	1[b]	2.50	2.50
	Ties	10[c]		
	Total	13		
I try, or would like to try, to be physically active regularly because it is interesting see my own improvement (final) - I try, or would like to try, to be physically active regularly because it is interesting see my own improvement (initial)	Negative Ranks	4[a]	3.63	14.50
	Positive Ranks	2[b]	3.25	6.50
	Ties	7[c]		
	Total	13		
I try, or would like to try, to be physically active regularly because feeling healthier is important value for me (final) - I try, or would like to try, to be physically active regularly because feeling healthier is important value for me (initial)	Negative Ranks	2[a]	2.00	4.00
	Positive Ranks	1[b]	2.00	2.00
	Ties	10[c]		
	Total	13		

a. final < initial

b. final > initial

c. final = initial

Table 25 shows the ranks of the Wilcoxon test, since a statistically significant difference between the observed measurements was not observed for all variables (visible from table 26), we do not note any significant deviation in the occurrence of positive and negative ranks.

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Table 26. Test Statistics[a] Motivation for Physical Activity RM4-FM

	Z	Asymp. Sig. (2-tailed)
I try, or would like to try, to be physically active regularly because I would feel bad about myself I did not (final) - I try, or would like to try, to be physically active regularly because I would feel bad about myself I did not (initial)	-1.311[b]	.190
I try, or would like to try, to be physically active regularly because others would be angry at me if I did not (final) - I try, or would like to try, to be physically active regularly because others would be angry at me if I did not (initial)	.000[c]	1.000
I try, or would like to try, to be physically active regularly because I enjoy physical activities (final) - I try, or would like to try, to be physically active regularly because I enjoy physical activities (initial)	-.085[d]	.932
I try, or would like to try, to be physically active regularly because I would feel like a failure if I did not (final) - I try, or would like to try, to be physically active regularly because I would feel like a failure if I did not (initial)	-.103[d]	.918
I try, or would like to try, to be physically active regularly because I feel as if it's the best way to help myself (final) - I try, or would like to try, to be physically active regularly because I feel as if it's the best way to help myself (initial)	-.734[d]	.463
I try, or would like to try, to be physically active regularly because people would think I'm weak person if I did not (final) - I try, or would like to try, to be physically active regularly because people would think I'm weak person if I did not (initial)	-.816[d]	.414

I try, or would like to try, to be physically active regularly because I feel as If I have no choice about being active, others make me do it (final) - I try, or would like to try, to be physically active regularly because I feel as If I have no choice about being active, others make me do it (initial)	-.184[d]	.854
I try, or would like to try, to be physically active regularly because it is a challenge to accomplish my goal (final) - I try, or would like to try, to be physically active regularly because it is a challenge to accomplish my goal (initial)	-.568[d]	.570
I try, or would like to try, to be physically active regularly because I believe physical activity helps me feel better (final) - I try, or would like to try, to be physically active regularly because I believe physical activity helps me feel better (initial)	-1.667[d]	.096
I try, or would like to try, to be physically active regularly because it's fun (final) - I try, or would like to try, to be physically active regularly because it's fun (initial)	-.503[d]	.615
I try, or would like to try, to be physically active regularly because I worry I would get into trouble with others if I did not (final) - I try, or would like to try, to be physically active regularly because I worry I would get into trouble with others if I did not (initial)	-1.000[b]	.317
I try, or would like to try, to be physically active regularly because it feels important to me personally to accomplish this goal (final) - I try, or would like to try, to be physically active regularly because it feels important to me personally to accomplish this goal (initial)	-.749[d]	.454
I try, or would like to try, to be physically active regularly because I feel quilty If I am not regularly active (final) - I try, or would like to try, to be physically active regularly because I feel quilty If I am not regularly active (initial)	-1.340[b]	.180
I try, or would like to try, to be physically active regularly because I want others to acknowledge that I am doing what I have been told I should do (final) - I try, or would like to try, to be physically active regularly because I want others to acknowledge that I am doing what I have been told I should do (initial)	-.272[d]	.785
I try, or would like to try, to be physically active regularly because it is interesting see my own improvement (final) - I try, or would like to try, to be physically active regularly because it is interesting see my own improvement (initial)	-.850[d]	.395

I try, or would like to try, to be physically active regularly because feeling healthier is important value for me (final) - I try, or would like to try, to be physically active regularly because feeling healthier is important value for me (initial)	-.577[d]	.564

a. Wilcoxon Signed Ranks Test
b. Based on negative ranks.
c. The sum of negative ranks equals the sum of positive ranks.
d. Based on positive ranks.

The significance of the p test is $p>0.05$ for all observed indicators. So, in this case, we reject the alternative and accept the null hypothesis of the research, i.e., no statistically significant difference was recorded for all observed indicators for initial and final measurements.

Table 27 shows the descriptive data of the subjects for the initial and final measurement, from the attached table you can read the value of the arithmetic mean, standard deviation, interquartile range, and the minimum and maximum value for all observed variables.

Table 27. Descriptive Statistics Motivation for Exercise/Working Out RM4-FM

	N	$\bar{x}$	Sd	Min	Max	Percentiles		
						25th	50th (Median)	75th
I exercise/work out (or would like to work out) because I simply enjoy working out (initial)	13	5.15	1.573	2	7	4.00	5.00	6.50
I exercise/work out (or would like to work out) because working out is important and beneficial for my health and lifestyle (initial)	13	6.38	.961	4	7	6.00	7,00	7.00

I exercise/work out (or would like to work out) because I would feel bad about myself if I didn't do it (initial)	13	3.92	1.935	1	7	2.00	4.00	6.00
I exercise/work out (or would like to work out) because it is fun and interesting (initial)	13	5.46	1.391	3	7	4.00	6.00	7.00
I exercise/work out (or would like to work out) because others like me better when I am in shape (initial)	13	1.38	1.121	1	5	1.00	1.00	1.00
I exercise/work out (or would like to work out) because I'd be afraid of failing to far out of shape if I didn't (initial)	13	3.08	1.706	1	5	1.50	3.00	5.00
I exercise/work out (or would like to work out) because it helps my image (initial)	13	2.69	1.653	1	5	1.00	3.00	4.50
I exercise/work out (or would like to work out) bacause it is personally important to me to work out (initial)	13	5.38	1.805	1	7	4.50	6.00	7.00
I exercise/work out (or would like to work out) because I feel pressured to work out (initial)	13	1.15	.376	1	2	1.00	100	1.00
I exercise/work out (or would like to work out) because I have a strong value for being active and healthy (initial)	13	5.85	1.281	3	7	5.00	6.00	7.00
I exercise/work out (or would like to work out) because I find pleasure in discovering and mastering new training techniques (initial)	13	5.08	2.326	1	7	3.00	6.00	7.00
I exercise/work out (or would like to work out) because I want others to see me as physically fit (initial)	13	3.15	1.772	1	6	2.00	2.00	4.50
I exercise/work out (or would like to work out) because I simply enjoy working out (final)	14	5.21	1.477	2	7	4.75	5.00	6.25

I exercise/work out (or would like to work out) because working out is important and beneficial for my health and lifestyle (final)	14	6.36	.745	5	7	6.00	6.50	7.00
I exercise/work out (or would like to work out) because I would feel bad about myself if I didn't do it (final)	14	4.50	1.605	1	6	3.00	5.00	6.00
I exercise/work out (or would like to work out) because it is fun and interesting (final)	14	5.57	1.222	3	7	5.00	5.50	7.00
I exercise/work out (or would like to work out) because others like me better when I am in shape (final)	13	1.92	1.605	1	5	1.00	1.00	3.00
I exercise/work out (or would like to work out) because I'd be afraid of failing to far out of shape if I didn't (final)	14	3.21	1.311	1	5	2.00	3.50	4.00
I exercise/work out (or would like to work out) because it helps my image (final)	14	3.29	1.637	1	6	1.75	4.00	4.25
I exercise/work out (or would like to work out) because it is personally important to me to work out (final)	14	5.57	1.158	3	7	5.00	6.00	6.25
I exercise/work out (or would like to work out) because I feel pressured to work out (final)	14	1.57	1.089	1	5	1.00	1.00	2.00
I exercise/work out (or would like to work out) because I have a strong value for being active and healthy (final)	14	5.21	1.311	2	7	4.75	5.00	6.00
I exercise/work out (or would like to work out) because I find pleasure in discovering and mastering new training techniques (final)	14	4.79	1.847	1	7	3.75	4.50	7.00
I exercise/work out (or would like to work out) because I want others to see me as physically fit (final)	14	3.00	1.519	1	5	1.75	3.00	4.25

Table 28. Ranks Motivation for Exercise/Working Out RM4-FM

		N	Mean Rank	Sum of Ranks
I exercise/work out (or would like to work out) because I simply enjoy working out (final) - I exercise/work out (or would like to work out) because I simply enjoy working out (initial)	Negative Ranks	5[a]	4.90	24.50
	Positive Ranks	5[b]	6.10	30.50
	Ties	3[c]		
	Total	13		
I exercise/work out (or would like to work out) because working out is important and beneficial for my health and lifestyle (final) - I exercise/work out (or would like to work out) because working out is important and beneficial for my health and lifestyle (initial)	Negative Ranks	4[a]	3.00	12.00
	Positive Ranks	2[b]	4.50	9.00
	Ties	7[c]		
	Total	13		
I exercise/work out (or would like to work out) because I would feel bad about myself if I didn't do it (final) - I exercise/work out (or would like to work out) because I would feel bad about myself if I didn't do it (initial)	Negative Ranks	4[a]	4.38	17.50
	Positive Ranks	6[b]	6.25	37.50
	Ties	3[c]		
	Total	13		
I exercise/work out (or would like to work out) because it is fun and interesting (final) - I exercise/work out (or would like to work out) because it is fun and interesting (initial)	Negative Ranks	3[a]	3.00	9.00
	Positive Ranks	4[b]	4.75	19.00
	Ties	6[c]		
	Total	13		
I exercise/work out (or would like to work out) because others like me better when I am in shape (final) - I exercise/work out (or would like to work out) because others like me better when I am in shape (initial)	Negative Ranks	0[a]	.00	.00
	Positive Ranks	1[b]	1.00	1.00
	Ties	11[c]		
	Total	12		
I exercise/work out (or would like to work out) because I'd be afraid of failing to far	Negative Ranks	4[a]	5.13	20.50
	Positive Ranks	5[b]	4.90	24.50

out of shape if I didn't (final) - I exercise/work out (or would like to work out) because I'd be afraid of failing to far out of shape if I didn't (initial)	Ties	4[c]		
	Total	13		
I exercise/work out (or would like to work out) because it helps my image (final) - I exercise/work out (or would like to work out) because it helps my image (initial)	Negative Ranks	2[a]	3.00	6.00
	Positive Ranks	6[b]	5.00	30.00
	Ties	5[c]		
	Total	13		
I exercise/work out (or would like to work out) bacause it is personally important to me to work out (final) - I exercise/work out (or would like to work out) bacause it is personally important to me to work out (initial)	Negative Ranks	4[a]	3.88	15.50
	Positive Ranks	4[b]	5.13	20.50
	Ties	5[c]		
	Total	13		
I exercise/work out (or would like to work out) because I feel pressured to work out (final) - I exercise/work out (or would like to work out) because I feel pressured to work out (initial)	Negative Ranks	0[a]	.00	.00
	Positive Ranks	3[b]	2.00	6.00
	Ties	10[c]		
	Total	13		
I exercise/work out (or would like to work out) because I have a strong value for being active and healthy (final) - I exercise/work out (or would like to work out) because I have a strong value for being active and healthy (initial)	Negative Ranks	9[a]	5.67	51.00
	Positive Ranks	2[b]	7.50	15.00
	Ties	2[c]		
	Total	13		
I exercise/work out (or would like to work out) because I find pleasure in discovering and mastering new training techniques (final) - I exercise/work out (or would like to work out) because I find pleasure in discovering and mastering new training techniques (initial)	Negative Ranks	7[a]	4.00	28.00
	Positive Ranks	2[b]	8.50	17.00
	Ties	4[c]		
	Total	13		
I exercise/work out (or would like to work out) because I want others to see me as physically fit (final) - I exercise/work out	Negative Ranks	5[a]	5.00	25.00
	Positive Ranks	4[b]	5.00	20.00
	Ties	4[c]		

(or would like to work out) because I want others to see me as physically fit (initial)	Total	13		

a. final < initial
b. final > initial
c. final = initial

Table 28 shows the ranks of the Wilcoxon test, since no statistically significant difference between the observed measurements was observed for all variables (visible from table 29), we do not note any significant deviation in the occurrence of positive and negative ranks.

Table 29. Test Statistics[a] Motivation for Exercise/Working Out RM4-FM

	Z	Asymp. Sig. (2-tailed)
I exercise/work out (or would like to work out) because I simply enjoy working out (final) - I exercise/work out (or would like to work out) because I simply enjoy working out (initial)	-.318[b]	.751
I exercise/work out (or would like to work out) because working out is important and beneficial for my health and lifestyle (final) - I exercise/work out (or would like to work out) because working out is important and beneficial for my health and lifestyle (initial)	-.333[c]	.739
I exercise/work out (or would like to work out) because I would feel bad about myself if I didn't do it (final) - I exercise/work out (or would like to work out) because I would feel bad about myself if I didn't do it (initial)	-1.027[b]	.304
I exercise/work out (or would like to work out) because it is fun and interesting (final) - I exercise/work out (or would like to work out) because it is fun and interesting (initial)	-.879[b]	.380
I exercise/work out (or would like to work out) because others like me better when I am in shape (final) - I exercise/work out (or would like to work out) because others like me better when I am in shape (initial)	-1.000[b]	.317

I exercise/work out (or would like to work out) because I'd be afraid of failing to far out of shape if I didn't (final) - I exercise/work out (or would like to work out) because I'd be afraid of failing to far out of shape if I didn't (initial)	-.240[b]	.810
I exercise/work out (or would like to work out) because it helps my image (final) - I exercise/work out (or would like to work out) because it helps my image (initial)	-1.725[b]	.084
I exercise/work out (or would like to work out) because it is personally important to me to work out (final) - I exercise/work out (or would like to work out) because it is personally important to me to work out (initial)	-.359[b]	.719
I exercise/work out (or would like to work out) because I feel pressured to work out (final) - I exercise/work out (or would like to work out) because I feel pressured to work out (initial)	-1.633[b]	.102
I exercise/work out (or would like to work out) because I have a strong value for being active and healthy (final) - I exercise/work out (or would like to work out) because I have a strong value for being active and healthy (initial)	-1.650[c]	.099
I exercise/work out (or would like to work out) because I find pleasure in discovering and mastering new training techniques (final) - I exercise/work out (or would like to work out) because I find pleasure in discovering and mastering new training techniques (initial)	-.664[c]	.507
I exercise/work out (or would like to work out) because I want others to see me as physically fit (final) - I exercise/work out (or would like to work out) because I want others to see me as physically fit (initial)	-.312[c]	.755

a. Wilcoxon Signed Ranks Test
b. Based on negative ranks.
c. Based on positive ranks.

The significance of the p test is $p>0.05$ for all observed indicators. So, in this case, we reject the alternative and accept the null hypothesis of the research, i.e. no statistically significant difference was recorded for all observed indicators for initial and final measurements.

Table 30 shows the descriptive data of the subjects for the initial and final measurement, from the attached table you can read the value of the arithmetic mean, standard deviation, interquartile range, and the minimum and maximum value for all observed variables.

Table 30. Descriptive Statistics WEIMS (Work Extrinsic and Intrinsic Motivation Scale)

	N	$\bar{x}$	Sd	Min	Max	Percentiles		
						25th	50th (Median)	75th
Because this is the type of work, I chose to do to attain a certain lifestyle (initial)	14	4.50	1.829	1	7	3.00	4.50	6.00
For the income it provides me (initial)	14	5.07	1.592	2	7	3.75	5.00	6.25
If I ask myself this question, I don't seem to be able to manage the important tasks related to this work (initial)	14	2.57	1.505	1	6	1.00	2.00	4.00
Because I derive much pleasure from learning new things (initial)	14	6.00	.784	5	7	5.00	6.00	7.00
Because it has become a fundamental part of who I am (initial)	14	4.93	1.328	3	7	4.00	5.00	6.00
Because I want to succeed at this job, if not I would be very ashamed of myself (initial)	14	4.14	1.610	1	7	3.00	4.00	5.25
Because I chose this type of work to attain my career goals (initial)	14	4.71	2.016	1	7	3.50	6.00	6.00
For the satisfaction I experience from taking on interesting challenges (initial)	14	5.64	.929	4	7	5.00	5.50	6.25
Because it allows me to earn money (initial)	14	5.14	1.292	2	7	4.75	5.00	6.00
Because it is part of the way in which I have chosen to live my life (initial)	14	4.86	1.351	2	7	4.00	5.00	6.00
Because I want to be very good at this work, otherwise I would be very disappointed (initial)	14	4.21	1.805	1	7	3.00	4.00	6.00
I don't know why; we are provided with unrealistic working conditions (initial)	14	2.64	1.216	1	4	1.00	3.00	4.00

Because I want to be a “winner” in life (initial)	14	3.57	1.910	1	7	2.00	3.50	5.25
Because it is the type of work, I have chosen to attain certain important objectives (initial)	14	4.43	1.453	1	6	4.00	5.00	5.25
For the satisfaction I experience when I am successful at doing difficult tasks (initial)	14	5.14	1.027	4	7	4.00	5.00	6.00
Because this type of work provides me with security (initial)	14	4.57	1.222	2	6	4.00	5.00	5.00
I don’t know, too much is expected of us (initial)	14	2.57	1.399	1	5	1.00	3.00	4.00
Because this job is a part of my life (initial)	14	5.21	.975	3	7	5.00	5.00	6.00
Because this is the type of work, I chose to do to attain a certain lifestyle (final)	14	4.93	1.730	2	7	3.75	5.00	6.25
For the income it provides me (final)	14	5.14	1.748	1	7	4.00	5.00	7.00
If I ask myself this question, I don’t seem to be able to manage the important tasks related to this work (final)	14	2.14	1.512	1	6	1.00	1.50	3.00
Because I derive much pleasure from learning new things (final)	14	5.64	1.151	4	7	4.75	6.00	7.00
Because it has become a fundamental part of who I am (final)	14	5.57	1.158	3	7	5.00	6.00	6.25
Because I want to succeed at this job, if not I would be very ashamed of myself (final)	14	3.79	1.888	1	6	2.00	4.00	6.00
Because I chose this type of work to attain my career goals (final)	14	4.93	1.774	2	7	3.75	5.50	6.25
For the satisfaction I experience from taking on interesting challenges (final)	14	5.86	.864	5	7	5.00	6.00	7.00
Because it allows me to earn money (final)	14	5.29	1.490	1	7	5.00	5.50	6.00
Because it is part of the way in which I have chosen to live my life (final)	14	5.57	.756	4	7	5.00	6.00	6.00
Because I want to be very good at this work, otherwise I would be very disappointed (final)	14	4.00	1.240	2	6	3.00	4.00	5.00
I don’t know why; we are provided with unrealistic working conditions (final)	14	1.64	.745	1	3	1.00	1.50	2.00

Because I want to be a “winner” in life (final)	14	3.86	1.956	1	7	2.00	4,00	5.25
Because it is the type of work, I have chosen to attain certain important objectives (final)	14	4.93	1.439	1	7	4.00	5,00	6.00
For the satisfaction I experience when I am successful at doing difficult tasks (final)	14	5.43	1.016	4	7	4.75	5,50	6.00
Because this type of work provides me with security (final)	14	4.79	1.762	1	6	4.00	5,50	6.00
I don’t know, too much is expected of us (final)	14	1.79	.893	1	4	1.00	2,00	2.00
Because this job is a part of my life (final)	14	5.07	1.492	3	7	4.00	5,00	6.25

Table 31. Ranks WEIMS (Work Extrinsic and Intrinsic Motivation Scale)

		N	Mean Rank	Sum of Ranks
Because this is the type of work I chose to do to attain a certain lifestyle (final) - Because this is the type of work I chose to do to attain a certain lifestyle (initial)	Negative Ranks	4[a]	5.25	21.00
	Positive Ranks	7[b]	6.43	45.00
	Ties	3[c]		
	Total	14		
For the income it provides me (final) - For the income it provides me (initial)	Negative Ranks	4[a]	5.38	21.50
	Positive Ranks	5[b]	4.70	23.50
	Ties	5[c]		
	Total	14		
If I ask myself this question, I don’t seem to be able to manage the important tasks related to this work (final) - If I ask myself this question, I don’t seem to be able to manage the important tasks related to this work (initial)	Negative Ranks	6[a]	5.50	33.00
	Positive Ranks	3[b]	4.00	12.00
	Ties	5[c]		
	Total	14		
Because I derive much pleasure from learning new things (final) - Because I	Negative Ranks	5[a]	5.40	27.00
	Positive Ranks	3[b]	3.00	9.00

derive much pleasure from learning new things (initial)	Ties	6[c]		
	Total	14		
Because it has become a fundamental part of who I am (final) - Because it has become a fundamental part of who I am (initial)	Negative Ranks	2[a]	4.00	8.00
	Positive Ranks	8[b]	5.88	47.00
	Ties	4[c]		
	Total	14		
Because I want to succeed at this job, if not I would be very ashamed of myself (final) - Because I want to succeed at this job, if not I would be very ashamed of myself (initial)	Negative Ranks	7[a]	4.86	34.00
	Positive Ranks	3[b]	7.00	21.00
	Ties	4[c]		
	Total	14		
Because I chose this type of work to attain my career goals (final) - Because I chose this type of work to attain my career goals (initial)	Negative Ranks	2[a]	6.50	13.00
	Positive Ranks	6[b]	3.83	23.00
	Ties	6[c]		
	Total	14		
For the satisfaction I experience from taking on interesting challenges (final) - For the satisfaction I experience from taking on interesting challenges (initial)	Negative Ranks	2[a]	4.00	8.00
	Positive Ranks	5[b]	4.00	20.00
	Ties	7[c]		
	Total	14		
Because it allows me to earn money (final) - Because it allows me to earn money (initial)	Negative Ranks	2[a]	4.50	9.00
	Positive Ranks	4[b]	3.00	12.00
	Ties	8[c]		
	Total	14		
Because it is part of the way in which I have chosen to live my life (final) - Because it is part of the way in which I have chosen to live my life (initial)	Negative Ranks	3[a]	4.50	13.50
	Positive Ranks	8[b]	6.56	52.50
	Ties	3[c]		
	Total	14		
Because I want to be very good at this work, otherwise I would be very disappointed (final) - Because I want	Negative Ranks	7[a]	6.29	44.00
	Positive Ranks	5[b]	6.80	34.00
	Ties	2[c]		

to be very good at this work, otherwise I would be very disappointed (initial)	Total	14		
I don't know why, we are provided with unrealistic working conditions (final) - I don't know why, we are provided with unrealistic working conditions (initial)	Negative Ranks	8[a]	6.38	51.00
	Positive Ranks	2[b]	2.00	4.00
	Ties	4[c]		
	Total	14		
Because I want to be a "winner" in life (final) - Because I want to be a "winner" in life (initial)	Negative Ranks	2[a]	5.00	10.00
	Positive Ranks	5[b]	3.60	18.00
	Ties	7[c]		
	Total	14		
Because it is the type of work I have chosen to attain certain important objectives (final) - Because it is the type of work I have chosen to attain certain important objectives (initial)	Negative Ranks	2[a]	3.50	7.00
	Positive Ranks	6[b]	4.83	29.00
	Ties	6[c]		
	Total	14		
For the satisfaction I experience when I am successful at doing difficult tasks (final) - For the satisfaction I experience when I am successful at doing difficult tasks (initial)	Negative Ranks	2[a]	4.50	9.00
	Positive Ranks	6[b]	4.50	27.00
	Ties	6[c]		
	Total	14		
Because this type of work provides me with security (final) - Because this type of work provides me with security (initial)	Negative Ranks	4[a]	5.00	20.00
	Positive Ranks	6[b]	5.83	35.00
	Ties	4[c]		
	Total	14		
I don't know, too much is expected of us (final) - I don't know, too much is expected of us (initial)	Negative Ranks	6[a]	4.33	26.00
	Positive Ranks	1[b]	2.00	2.00
	Ties	7[c]		
	Total	14		
Because this job is a part of my life (final) - Because this job is a part of my life (initial)	Negative Ranks	6[a]	5.33	32.00
	Positive Ranks	4[b]	5.75	2300
	Ties	4[c]		
	Total	14		

a. final < initial
b. final > initial
c. final = initial

If you look at the ranks for the question *Because it has become a fundamental part of who I am,* in 2 cases a negative rank was recorded, i.e. the value of the indicator on the post test was lower than the value on the initial test, while in 8 cases a positive rank was recorded, i.e. the value of the indicators on the post-testing is higher than the value on the initial testing, finally in 4 cases the same value of the indicators was recorded for both the initial and post-testing.

If you look at the ranks for the question *I don't know why, we are provided with unrealistic working conditions*, in 8 cases a negative rank was recorded, i.e. the value of the indicator on the post-test is lower than the value of the answer on the initial test, while in 2 cases a positive was recorded the rank, that is, the value of the indicator on the post-testing is higher than the value of the indicator on the initial testing, finally in 4 cases the same value of the indicator was recorded for both the initial and the post-testing.

If you look at the ranks for the question *I don't know, too much is expected of us,* in 6 cases a negative rank was recorded, i.e. the value of the indicator on the post-test is lower than the value of the answer on the initial test, while in 1 case a positive rank was recorded, that is, the value of the indicators on the post-testing is higher than the value of the indicators on the initial testing, finally in 7 cases the same value of the indicators was recorded for both the initial and the post-testing.

Table 32. Test Statistics WEIMS (Work Extrinsic and Intrinsic Motivation Scale)

	Z	Asymp. Sig. (2-tailed)
Because this is the type of work I chose to do to attain a certain lifestyle (final) - Because this is the type of work I chose to do to attain a certain lifestyle (initial)	-1.089[b]	.276
For the income it provides me (final) - For the income it provides me (initial)	-.123[b]	.902
If I ask myself this question, I don't seem to be able to manage the important tasks related to this work (final) - If I ask myself this question, I don't seem to be able to manage the important tasks related to this work (initial)	-1.310[c]	.190
Because I derive much pleasure from learning new things (final) - Because I derive much pleasure from learning new things (initial)	-1.299[c]	.194
Because it has become a fundamental part of who I am (final) - Because it has become a fundamental part of who I am (initial)	-2.070[b]	**.038**
Because I want to succeed at this job, if not I would be very ashamed of myself (final) - Because I want to succeed at this job, if not I would be very ashamed of myself (initial)	-.670[c]	.503
Because I chose this type of work to attain my career goals (final) - Because I chose this type of work to attain my career goals (initial)	-.707[b]	.480
For the satisfaction I experience from taking on interesting challenges (final) - For the satisfaction I experience from taking on interesting challenges (initial)	-1.134[b]	.257
Because it allows me to earn money (final) - Because it allows me to earn money (initial)	-.317[b]	.751
Because it is part of the way in which I have chosen to live my life (final) - Because it is part of the way in which I have chosen to live my life (initial)	-1.812[b]	.070
Because I want to be very good at this work, otherwise I would be very disappointed (final) - Because I want to be very good at this work, otherwise I would be very disappointed (initial)	-.401[c]	.689
I don't know why, we are provided with unrealistic working conditions (final) - I don't know why, we are provided with unrealistic working conditions (initial)	-2.458[c]	**.014**

Because I want to be a “winner” in life (final) - Because I want to be a “winner” in life (initial)	-.686[b]	.493
Because it is the type of work I have chosen to attain certain important objectives (final) - Because it is the type of work I have chosen to attain certain important objectives (initial)	-1.611[b]	.107
For the satisfaction I experience when I am successful at doing difficult tasks (final) - For the satisfaction I experience when I am successful at doing difficult tasks (initial)	-1.414[b]	.157
Because this type of work provides me with security (final) - Because this type of work provides me with security (initial)	-.832[b]	.405
I don’t know, too much is expected of us (final) - I don’t know, too much is expected of us (initial)	-2.050[c]	**.040**
Because this job is a part of my life (final) - Because this job is a part of my life (initial)	-.486[c]	.627

a. Wilcoxon Signed Ranks Test
b. Based on negative ranks.
c. Based on positive ranks.

The significance of the p test is less than 0.05 ($p<0.05$) for the questions *Because it has become a fundamental part of who I am, I don't know why, we are provided with unrealistic working conditions, I don't know , too much is expected of us* in the first and second measurements, which means that we reject the null and accept the alternative research hypothesis, i.e. it can be said, with a confidence level of 95%, that a statistically significant difference was recorded between the first and second measurements for the observed indicators .

Table 33 shows the descriptive data of the subjects for the initial and final measurement, from the attached table you can read the value of the arithmetic mean, standard deviation, interquartile range, and the minimum and maximum value for all observed variables.

Table 33. Descriptive Statistics Psychological Capital Questionnaire 12-item

	N	$\bar{x}$	Sd	Min	Max	Percentiles		
						25th	50th (Median)	75th
I feel confident in representing my work are in meetings with management (initial)	14	4.36	1.151	3	6	3.00	5.00	5.00
I feel confident contributing to discussions about the company's strategy (initial)	14	3.43	1.453	1	6	2.75	3.50	4.25
I feel confident presenting information to a group of colleagues (initial)	14	5.07	.730	3	6	5.00	5.00	5.25
If I should find myself in a jam at work, I could think of many ways to get out of it (initial)	14	4.50	1.019	2	6	4.00	5.00	5.00
Right now I see myself as being pretty successful at work (initial)	14	4.71	.914	3	6	4.00	5.00	5.00
I can think of many ways to reach my current goals (initial)	14	4.79	.579	3	5	5.00	5.00	5.00
At this time, I am meeting the work goals that I have set for myself (initial)	14	4.29	1.204	2	6	3.75	5.00	5.00
I can be "only own" so to separate work If I have to (initial)	14	3.57	1.016	1	5	3.00	4.00	4.00
I usually take stressful things at work in stride (initial)	14	3.64	1.008	1	5	3.00	4.00	4.00
I can get through difficult times at work because I've experienced difficulty before (initial)	14	4.43	.938	3	6	4.00	4.00	5.00

I always look on the bright side of things regarding my job (initial)	14	4.29	.994	2	6	4.00	4.00	5.00
I am optimistic about what will happen to me in the future as it pertains to work (initial)	14	4.71	.914	3	6	4.00	5.00	5.00
I feel confident in representing my work are in meetings with management (final)	13	4.69	.947	3	6	4.00	5.00	5.00
I feel confident contributing to discussions about the company's strategy (final)	14	4.07	.997	2	6	3.75	4.00	5.00
I feel confident presenting information to a group of colleagues (final)	14	5.29	.611	4	6	5.00	5.00	6.00
If I should find myself in a jam at work, I could think of many ways to get out of it (final)	14	4.71	.726	3	6	4.00	5.00	5.00
Right now I see myself as being pretty successful at work (final)	14	4.93	.730	4	6	4.00	5.00	5.25
I can think of many ways to reach my current goals (final)	14	4.57	1.016	2	6	4.00	5.00	5.00
At this time, I am meeting the work goals that I have set for myself (final)	14	4.79	.802	3	6	4.00	5.00	5.00
I can be "only own" so to separate work If I have to (final)	14	3.93	1.072	2	5	3.00	4.00	5.00
I usually take stressful things at work in stride (final)	14	4.21	.893	3	6	3.75	4.00	5.00
I can get through difficult times at work because I've experienced difficulty before (final)	14	4.93	.730	4	6	4.00	5.00	5.25
I always look on the bright side of things regarding my job (final)	14	4.57	.938	3	6	4.00	5.00	5.00
I am optimistic about what will happen to me in the future as it pertains to work (final)	14	4.71	1.069	2	6	4.75	5.00	5.00

Table 34. Ranks Psychological Capital Questionnaire 12-item

		N	Mean Rank	Sum of Ranks
I feel confident in representing my work are in meetings with management (final) - I feel confident in representing my work are in meetings with management (initial)	Negative Ranks	0[a]	.00	.00
	Positive Ranks	3[b]	2.00	6.00
	Ties	10[c]		
	Total	13		
I feel confident contributing to discussions about the company's strategy (final) - I feel confident contributing to discussions about the company's strategy (initial)	Negative Ranks	2[a]	4.00	8.00
	Positive Ranks	7[b]	5.29	37.00
	Ties	5[c]		
	Total	14		
I feel confident presenting information to a group of colleagues (final) - I feel confident presenting information to a group of colleagues (initial)	Negative Ranks	1[a]	3.00	3.00
	Positive Ranks	4[b]	3.00	12.00
	Ties	9[c]		
	Total	14		
If I should find myself in a jam at work, I could think of many ways to get out of it (final) - If I should find myself in a jam at work, I could think of many ways to get out of it (initial)	Negative Ranks	4[a]	3.00	12.00
	Positive Ranks	4[b]	6.00	24.00
	Ties	6[c]		

	Total	14		
Right now I see myself as being pretty successful at work (final) - Right now I see myself as being pretty successful at work (initial)	Negative Ranks	0[a]	.00	.00
	Positive Ranks	3[b]	2.00	6.00
	Ties	11[c]		
	Total	14		
I can think of many ways to reach my current goals (final) - I can think of many ways to reach my current goals (initial)	Negative Ranks	4[a]	3.75	15.00
	Positive Ranks	2[b]	3.00	6.00
	Ties	8[c]		
	Total	14		
At this time, I am meeting the work goals that I have set for myself (final) - At this time, I am meeting the work goals that I have set for myself (initial)	Negative Ranks	3[a]	4.00	12.00
	Positive Ranks	6[b]	5.50	33.00
	Ties	5[c]		
	Total	14		
I can be "only own" so to separate work If I have to (final) - I can be "only own" so to separate work If I have to (initial)	Negative Ranks	4[a]	4.25	17.00
	Positive Ranks	6[b]	6.33	38.00
	Ties	4[c]		
	Total	14		
I usually take stressful things at work in stride (final) - I usually take stressful things at work in stride (initial)	Negative Ranks	4[a]	3.00	12.00
	Positive Ranks	6[b]	7.17	43.00
	Ties	4[c]		
	Total	14		

I can get through difficult times at work because I've experienced difficulty before (final) - I can get through difficult times at work because I've experienced difficulty before (initial)	Negative Ranks	3[a]	5.00	15.00
	Positive Ranks	8[b]	6.38	51.00
	Ties	3[c]		
	Total	14		
I always look on the bright side of things regarding my job (final) - I always look on the bright side of things regarding my job (initial)	Negative Ranks	3[a]	6.17	18.50
	Positive Ranks	7[b]	5.21	36.50
	Ties	4[c]		
	Total	14		
I am optimistic about what will happen to me in the future as it pertains to work (final) - I am optimistic about what will happen to me in the future as it pertains to work (initial)	Negative Ranks	2[a]	2.50	5.00
	Positive Ranks	2[b]	2.50	5.00
	Ties	10[c]		
	Total	14		

a. final < initial
b. final > initial
c. final = initial

Table 34 shows the ranks of the Wilcoxon test, since no statistically significant difference between the observed measurements was observed for all variables (visible from table 35), we do not note any significant deviation in the occurrence of positive and negative ranks.

Table 35. Test Statistics Psychological Capital Questionnaire 12-item

	Z	Asymp. Sig. (2-tailed)
I feel confident in representing my work are in meetings with management (final) - I feel confident in representing my work are in meetings with management (initial)	-1.633[b]	.102
I feel confident contributing to discussions about the company's strategy (final) - I feel confident contributing to discussions about the company's strategy (initial)	-1.811[b]	.070
I feel confident presenting information to a group of colleagues (final) - I feel confident presenting information to a group of colleagues (initial)	-1.342[b]	.180
If I should find myself in a jam at work, I could think of many ways to get out of it (final) - If I should find myself in a jam at work, I could think of many ways to get out of it (initial)	-.866[b]	.386
Right now I see myself as being pretty successful at work (final) - Right now I see myself as being pretty successful at work (initial)	-1.732[b]	.083
I can think of many ways to reach my current goals (final) - I can think of many ways to reach my current goals (initial)	-1.000[c]	.317
At this time, I am meeting the work goals that I have set for myself (final) - At this time, I am meeting the work goals that I have set for myself (initial)	-1.311[b]	.190
I can be "only own" so to separate work If I have to (final) - I can be "only own" so to separate work If I have to (initial)	-1.099[b]	.272
I usually take stressful things at work in stride (final) - I usually take stressful things at work in stride (initial)	-1.612[b]	.107

I can get through difficult times at work because I've experienced difficulty before (final) - I can get through difficult times at work because I've experienced difficulty before (initial)	-1.706[b]	.088
I always look on the bright side of things regarding my job (final) - I always look on the bright side of things regarding my job (initial)	-.973[b]	.331
I am optimistic about what will happen to me in the future as it pertains to work (final) - I am optimistic about what will happen to me in the future as it pertains to work (initial)	.000[d]	1.000

a. Wilcoxon Signed Ranks Test
b. Based on negative ranks.
c. Based on positive ranks.
d. The sum of negative ranks equals the sum of positive ranks.

Table 36 shows the descriptive data of the subjects for the initial and final measurement, from the attached table you can read the value of the arithmetic mean, standard deviation, interquartile range, and the minimum and maximum value for all observed variables.

Table 36. Descriptive Statistics Psycological Empowerment Questionnare 12-item

	N	$\bar{x}$	Sd	Min	Max	Percentiles		
						25th	50th (Median)	75th
I am confident about my ability to do my job (initial)	14	6.00	.877	4	7	5.75	6.00	7.00
The work that I do is important to me (initial)	14	5.93	.917	4	7	5.00	6.00	7.00
I have significant autonomy in determining how I do my job (initial)	14	4.79	.893	3	6	4.00	5.00	5.25

My impact on what happens in my department is large (initial)	14	4.36	1.447	1	6	3.75	4.00	6.00
My job activities are personally meaningful to me (initial)	13	4.08	.760	3	5	3.50	4.00	5.00
I have a great deal of control over what happens in my department (initial)	14	3.86	1.460	1	6	2.75	4.00	5.00
I can decide on my own how to go about doing my own work (initial)	14	4.57	1.222	3	7	3.75	4.50	5.25
I have considerable opportunity for independence and freedom in how I do my job (initial)	14	4.71	1.267	2	7	4.00	5.00	5.25
I have mastered the skills necessary for my job (initial)	14	5.50	1.092	3	7	4.75	6.00	6.00
The work I do is meaningful to me (initial)	14	5.86	.949	4	7	5.75	6.00	6.25
I have significant influence over what happens in my department (initial)	14	4.07	1.592	1	7	3.00	4.00	5.00
I am self-assured about my capabilities to perform my work activities (initial)	14	5.57	1.089	4	7	4.75	6.00	6.25
I am confident about my ability to do my job (final)	14	6.21	.699	5	7	6.00	6.00	7.00
The work that I do is important to me (final)	14	5.86	.949	4	7	5.00	6.00	7.00
I have significant autonomy in determining how I do my job (final)	14	5.57	.938	4	7	5.00	6.00	6.00
My impact on what happens in my department is large (final)	14	4.36	1.447	2	6	3.00	4.50	6.00
My job activities are personally meaningful to me (final)	14	4.14	.864	2	5	4.00	4.00	5.00
I have a great deal of control over what happens in my department (final)	14	4.29	1.684	1	7	3.50	4.50	5.25
I can decide on my own how to go about doing my own work (final)	14	4.71	1.541	1	7	4.00	5.00	6.00
I have considerable opportunity for independence and freedom in how I do my job (final)	14	5.29	1.069	3	7	4.75	5.50	6.00
I have mastered the skills necessary for my job (final)	14	5.79	1.188	3	7	5.00	6.00	7.00
The work I do is meaningful to me (final)	14	5.93	.917	4	7	5.00	6.00	7.00

I have significant influence over what happens in my department (final)	14	4.21	1.626	1	6	2.75	5.00	5.25
I am self-assured about my capabilities to perform my work activities (final)	14	6.00	.961	4	7	5.00	6.00	7.00

Table 37. Ranks Psychological Empowerment Questionnaire 12-item

		N	Mean Rank	Sum of Ranks
I am confident about my ability to do my job (final) - I am confident about my ability to do my job (initial)	Negative Ranks	1[a]	3.00	3.00
	Positive Ranks	4[b]	3.00	12.00
	Ties	9[c]		
	Total	14		
The work that I do is important to me (final) - The work that I do is important to me (initial)	Negative Ranks	3[a]	3.00	9.00
	Positive Ranks	2[b]	3.00	6.00
	Ties	9[c]		
	Total	14		
I have significant autonomy in determining how I do my job (final) - I have significant autonomy in determining how I do my job (initial)	Negative Ranks	0[a]	.00	.00
	Positive Ranks	8[b]	4.50	36.00
	Ties	6[c]		
	Total	14		
My impact on what happens in my department is large (final) - My impact on what happens in my department is large (initial)	Negative Ranks	5[a]	4.50	22.50
	Positive Ranks	4[b]	5.63	22.50
	Ties	5[c]		
	Total	14		

My job activities are personally meaningful to me (final) - My job activities are personally meaningful to me (initial)	Negative Ranks	3[a]	3.50	10.50
	Positive Ranks	3[b]	3.50	10.50
	Ties	7[c]		
	Total	13		
I have a great deal of control over what happens in my department (final) - I have a great deal of control over what happens in my department (initial)	Negative Ranks	2[a]	3.00	6.00
	Positive Ranks	5[b]	4.40	22.00
	Ties	7[c]		
	Total	14		
I can decide on my own how to go about doing my own work (final) - I can decide on my own how to go about doing my own work (initial)	Negative Ranks	2[a]	5.50	11.00
	Positive Ranks	6[b]	4.17	25.00
	Ties	6[c]		
	Total	14		
I have considerable opportunity for independence and freedom in how I do my job (final) - I have considerable opportunity for independence and freedom in how I do my job (initial)	Negative Ranks	2[a]	5.00	10.00
	Positive Ranks	7[b]	5.00	35.00
	Ties	5[c]		
	Total	14		
I have mastered the skills necessary for my job (final) - I have mastered the skills necessary for my job (initial)	Negative Ranks	2[a]	3.25	6.50
	Positive Ranks	4[b]	3.63	14.50
	Ties	8[c]		
	Total	14		
The work I do is meaningful to me (final) - The work I do is meaningful to me (initial)	Negative Ranks	4[a]	4.00	16.00
	Positive Ranks	4[b]	5.00	20.00
	Ties	6[c]		
	Total	14		
I have significant influence over what happens in my department (final) - I have significant influence over what happens in my department (initial)	Negative Ranks	4[a]	5.75	23.00
	Positive Ranks	6[b]	5.33	32.00
	Ties	4[c]		
	Total	14		
	Negative Ranks	4[a]	3.50	14.00

I am self-assured about my capabilities to perform my work activities (final) - I am self-assured about my capabilities to perform my work activities (initial)	Positive Ranks	6[b]	6.83	41.00
	Ties	4[c]		
	Total	14		

a. final < initial
b. final > initial
c. final = initial

If you look at the ranks for the question *I have significant autonomy in determining how I do my job*, in 0 cases a negative rank was recorded, i.e. the value of the indicator on the post test is lower than the value on the initial test, while in 8 cases a positive rank was recorded, i.e. the value of the indicators on the post-testing is higher than the value on the initial testing, finally in 6 cases the same value of the indicators was recorded for both the initial and post-testing.

Table 38. Test Statistics Psychological Empowerment Questionnaire 12-item

	Z	Asymp. Sig. (2-tailed)
I am confident about my ability to do my job (final) - I am confident about my ability to do my job (initial)	-1.342[b]	.180
The work that I do is important to me (final) - The work that I do is important to me (initial)	-.447[c]	.655
I have significant autonomy in determining how I do my job (final) - I have significant autonomy in determining how I do my job (initial)	-2.636[b]	**.008**
My impact on what happens in my department is large (final) - My impact on what happens in my department is large (initial)	.000[d]	1.000

My job activities are personally meaningful to me (final) - My job activities are personally meaningful to me (initial)	.000[d]	1.000
I have a great deal of control over what happens in my department (final) - I have a great deal of control over what happens in my department (initial)	-1.403[b]	.161
I can decide on my own how to go about doing my own work (final) - I can decide on my own how to go about doing my own work (initial)	-1.005[b]	.315
I have considerable opportunity for independence and freedom in how I do my job (final) - I have considerable opportunity for independence and freedom in how I do my job (initial)	-1.513[b]	.130
I have mastered the skills necessary for my job (final) - I have mastered the skills necessary for my job (initial)	-.850[b]	.395
The work I do is meaningful to me (final) - The work I do is meaningful to me (initial)	-.302[b]	.763
I have significant influence over what happens in my department (final) - I have significant influence over what happens in my department (initial)	-.486[b]	.627
I am self-assured about my capabilities to perform my work activities (final) - I am self-assured about my capabilities to perform my work activities (initial)	-1.418[b]	.156

a. Wilcoxon Signed Ranks Test
b. Based on negative ranks.
c. Based on positive ranks.
d. The sum of negative ranks equals the sum of positive ranks.

The significance of the p test is less than 0.05 ($p<0.05$) for the questions *I have significant autonomy in determining how I do my job* in the first and second measurements, which means that we reject the null and accept the alternative research

hypothesis, that is, it can be said, with a confidence level of 95%, as a statistically significant difference was recorded between the first and second measurements for the observed indicator.

4.5 Difference testing for observed factors (dimensions in the analysis)

Table 39 shows the descriptive data of the subjects for the initial and final measurement, from the attached table you can read the value of the arithmetic mean, standard deviation, interquartile range, and the minimum and maximum value for all observed factors. The factors were calculated according to the validated instructions for each individual questionnaire

Table 39. Descriptive Statistics Initial and Final measurement

	N	$\bar{x}$	Std. Deviation	Minimum	Maximum	Percentiles		
						25th	50th (Median)	75th
Motivation for Physical Activity: External Regulation (initial)	13	1.3846	.56472	1.00	2.50	1.0000	1.0000	1.8750
Motivation for Physical Activity: Introjected Regulation (initial)	13	3.6538	.84495	2.50	5.00	2.7500	3.7500	4.2500
Motivation for Physical Activity: Identified Regulation (initial)	13	6.3077	.60513	5.25	7.00	5.8750	6.5000	6.8750

Motivation for Physical Activity: Intrinsic Motivation (initial)	13	5.7500	1.26656	3.25	7.00	5.3750	6.0000	6.8750
Motivation for Exercise/Working Out: External Regulation (initial)	13	2.4103	1.26311	1.00	4.67	1.3333	2.0000	3.8333
Motivation for Exercise/Working Out: Introjected Regulation (initial)	13	2.7179	.81475	1.33	4.00	2.1667	2.6667	3.5000
Motivation for Exercise/Working Out: Identified Regulation (initial)	13	5.8718	1.25121	2.67	7.00	5.0000	6.3333	6.6667
Motivation for Exercise/Working Out: Intrinsic Motivation (initial)	13	5.2308	1.69085	2.00	7.00	3.8333	5.6667	6.8333
Intrinsic motivation WEIMS (initial)	14	5.5952	.82874	4.33	7.00	4.9167	5.6667	6.0833
Integrated regulation WEIMS (initial)	14	5.0000	.98710	3.00	6.33	4.2500	5.0000	6.0000
Identified regulation WEIMS (initial)	14	4.5476	1.62042	1.00	6.33	3.6667	5.0000	6.0000
Introjected regulation WEIMS (initial)	14	3.9762	1.45276	1.33	6.00	2.5833	4.3333	5.0833
External regulation WEIMS (initial)	14	4.9286	1.19956	2.33	6.67	4.4167	5.1667	5.6667
Amotivation WEIMS (initial)	14	2.5952	.90750	1.00	4.00	1.9167	2.6667	3.3333
Self efficacy PCQ (initial)	14	4.2857	.86585	3.00	6.00	3.6667	4.1667	4.8333
Hope PCQ (initial)	14	4.5714	.69634	3.00	5.75	4.0000	4.7500	5.0000
Resilience PCQ (initial)	14	3.8810	.72332	2.00	4.67	3.5833	4.0000	4.3333
Optimism PCQ (initial)	14	4.5000	.80861	2.50	6.00	4.0000	4.5000	5.0000
Meaning - Psychological Empowerment (initial)	13	5.2564	.79529	3.67	6.33	4.8333	5.3333	5.8333
Competence - Psychological Empowerment (initial)	14	5.6905	.83168	4.00	7.00	5.1667	5.8333	6.3333

Self - Determination - Psychological Empowerment (initial)	14	4.6905	.99969	3.00	6.67	3.9167	4.8333	5.4167
Impact - Psychological Empowerment (initial)	14	4.0952	1.39246	1.00	6.33	3.0000	4.6667	5.0000
Motivation for Physical Activity: External Regulation (final)	14	1.3393	.57685	1.00	3.00	1.0000	1.0000	1.5625
Motivation for Physical Activity: Introjected Regulation (final)	14	3.7321	.85746	2.00	5.00	3.1875	3.7500	4.5000
Motivation for Physical Activity: Identified Regulation (final)	14	6.0179	.58395	5.25	7.00	5.5000	6.0000	6.5625
Motivation for Physical Activity: Intrinsic Motivation (final)	14	5.4107	.98355	3.75	7.00	4.6875	5.6250	6.0625
Motivation for Exercise/Working Out: External Regulation (final)	13	2.6667	1.38778	1.00	5.33	1.3333	2.6667	3.3333
Motivation for Exercise/Working Out: Introjected Regulation (final)	14	3.0952	.99080	1.00	5.33	2.6667	2.8333	3.6667
Motivation for Exercise/Working Out: Identified Regulation (final)	14	5.7143	.90447	3.67	7.00	5.0000	6.0000	6.3333
Motivation for Exercise/Working Out: Intrinsic Motivation (final)	14	5.1905	1.43052	2.00	7.00	4.3333	5.1667	6.4167
Intrinsic motivation WEIMS (final)	14	5.6429	.91953	4.33	7.00	4.9167	5.5000	6.6667
Integrated regulation WEIMS (final)	14	5.4048	1.05554	3.33	7.00	4.5833	5.5000	6.3333
Identified regulation WEIMS (final)	14	4.9286	1.37237	2.00	7.00	4.0833	5.0000	6.0833
Introjected regulation WEIMS (final)	14	3.8810	1.33722	1.67	6.00	2.5833	4.0000	4.7500

External regulation WEIMS (final)	14	5.0714	1.55897	1.00	6.67	4.2500	5.6667	6.0833
Amotivation WEIMS (final)	14	1.8571	.79221	1.00	3.00	1.0000	1.6667	2.6667
Self efficacy PCQ (final)	13	4.6923	.71312	3.33	6.00	4.1667	4.6667	5.0000
Hope PCQ (final)	14	4.7500	.58012	3.50	5.50	4.2500	5.0000	5.0625
Resilience PCQ (final)	14	4.3571	.75633	3.33	5.67	3.6667	4.1667	5.0000
Optimism PCQ (final)	14	4.6429	.92878	2.50	5.50	4.3750	5.0000	5.5000
Meaning - Psychological Empowerment (final)	14	5.3095	.76755	4.00	6.33	4.6667	5.3333	6.0000
Competence - Psychological Empowerment (final)	14	6.0000	.76236	4.33	7.00	5.5833	6.0000	6.5000
Self - Determination - Psychological Empowerment (final)	14	5.1905	.95822	3.67	6.67	4.3333	5.1667	6.0000
Impact - Psychological Empowerment (final)	14	4.2857	1.48414	1.33	6.00	3.0833	4.6667	5.4167

Table 40. Ranks for Initial and Final measurment

		N	Mean Rank	Sum of Ranks
Motivation for Physical Activity: External Regulation (final) - Motivation for Physical Activity: External Regulation (initial)	Negative Ranks	4[a]	3.13	12.50
	Positive Ranks	2[b]	4.25	8.50
	Ties	7[c]		
	Total	13		
Motivation for Physical Activity: Introjected Regulation (final) - Motivation for Physical Activity: Introjected Regulation (initial)	Negative Ranks	4[a]	7.50	30.00
	Positive Ranks	9[b]	6.78	61.00
	Ties	0[c]		
	Total	13		
Motivation for Physical Activity: Identified Regulation (final) - Motivation for Physical Activity: Identified Regulation (initial)	Negative Ranks	9[a]	6.39	57.50
	Positive Ranks	3[b]	6.83	20.50
	Ties	1[c]		
	Total	13		
	Negative Ranks	7[a]	7.14	50.00

Motivation for Physical Activity: Intrinsic Motivation (final) - Motivation for Physical Activity: Intrinsic Motivation (initial)	Positive Ranks	5[b]	5.60	28.00
	Ties	1[c]		
	Total	13		
Motivation for Exercise/Working Out: External Regulation (final) - Motivation for Exercise/Working Out: External Regulation (initial)	Negative Ranks	4[a]	3.75	15.00
	Positive Ranks	5[b]	6.00	30.00
	Ties	3[c]		
	Total	12		
Motivation for Exercise/Working Out: Introjected Regulation (final) - Motivation for Exercise/Working Out: Introjected Regulation (initial)	Negative Ranks	4[a]	5.50	22.00
	Positive Ranks	7[b]	6.29	44.00
	Ties	2[c]		
	Total	13		
Motivation for Exercise/Working Out: Identified Regulation (final) - Motivation for Exercise/Working Out: Identified Regulation (initial)	Negative Ranks	9[a]	6.06	54.50
	Positive Ranks	3[b]	7.83	23.50
	Ties	1[c]		
	Total	13		
Motivation for Exercise/Working Out: Intrinsic Motivation (final) - Motivation for Exercise/Working Out: Intrinsic Motivation (initial)	Negative Ranks	6[a]	4.25	25.50
	Positive Ranks	3[b]	6.50	19.50
	Ties	4[c]		
	Total	13		
Intrinsic motivation WEIMS (final) - Intrinsic motivation WEIMS (initial)	Negative Ranks	5[a]	7.10	35.50
	Positive Ranks	7[b]	6.07	42.50
	Ties	2[c]		
	Total	14		
Integrated regulation WEIMS (final) - Integrated regulation WEIMS (initial)	Negative Ranks	3[a]	6.33	19.00
	Positive Ranks	10[b]	7.20	72.00
	Ties	1[c]		
	Total	14		
Identified regulation WEIMS (final) - Identified regulation WEIMS (initial)	Negative Ranks	3[a]	9.00	27.00
	Positive Ranks	10[b]	6.40	64.00

	Ties	1[c]		
	Total	14		
Introjected regulation WEIMS (final) - Introjected regulation WEIMS (initial)	Negative Ranks	7[a]	7.00	49.00
	Positive Ranks	6[b]	7.00	42.00
	Ties	1[c]		
	Total	14		
External regulation WEIMS (final) - External regulation WEIMS (initial)	Negative Ranks	3[a]	6.67	20.00
	Positive Ranks	7[b]	5.00	35.00
	Ties	4[c]		
	Total	14		
Amotivation WEIMS (final) - Amotivation WEIMS (initial)	Negative Ranks	9[a]	5.94	53.50
	Positive Ranks	1[b]	1.50	1.50
	Ties	4[c]		
	Total	14		
Self efficacy PCQ (final) - Self efficacy PCQ (initial)	Negative Ranks	2[a]	5.00	10.00
	Positive Ranks	9[b]	6.22	56.00
	Ties	2[c]		
	Total	13		
Hope PCQ (final) - Hope PCQ (initial)	Negative Ranks	4[a]	6.63	26.50
	Positive Ranks	9[b]	7.17	64.50
	Ties	1[c]		
	Total	14		
Resilience PCQ (final) - Resilience PCQ (initial)	Negative Ranks	5[a]	5.50	27.50
	Positive Ranks	9[b]	8.61	77.50
	Ties	0[c]		
	Total	14		
Optimism PCQ (final) - Optimism PCQ (initial)	Negative Ranks	3[a]	8.00	24.00
	Positive Ranks	8[b]	5.25	42.00
	Ties	3[c]		

	Total	14		
Meaning - Psychological Empowerment (final) - Meaning - Psychological Empowerment (initial)	Negative Ranks	6[a]	4.75	28.50
	Positive Ranks	4[b]	6.63	26.50
	Ties	3[c]		
	Total	13		
Competence - Psychological Empowerment (final) - Competence - Psychological Empowerment (initial)	Negative Ranks	5[a]	3.90	19.50
	Positive Ranks	7[b]	8.36	58.50
	Ties	2[c]		
	Total	14		
Self - Determination - Psychological Empowerment (final) - Self - Determination - Psychological Empowerment (initial)	Negative Ranks	2[a]	6.50	13.00
	Positive Ranks	10[b]	6.50	65.00
	Ties	2[c]		
	Total	14		
Impact - Psychological Empowerment (final) - Impact - Psychological Empowerment (initial)	Negative Ranks	5[a]	5.90	29.50
	Positive Ranks	7[b]	6.93	48.50
	Ties	2[c]		
	Total	14		

a. final < initial
b. final > initial
c. final = initial

If you look at the ranks for the *Amotivation WEIMS factor*, in 9 cases a negative rank was recorded, i.e., the value of the indicator on the post test was lower than the value on the initial test, while in 1 case a positive rank was recorded, that is, the value of the indicator on the post test was higher than the value on the initial test. initial testing, finally in 4 cases the same value of indicators was recorded for both initial and post testing.

If you look at the ranks for the *Self-efficacy PCQ factor*, in 2 cases a negative rank was recorded, that is, the value of the indicator on the post-test is lower than the value on the initial test, while in 9 cases a positive rank was recorded, that is, the value of the indicator on the post-test is higher than the value at the initial testing, finally, in 2 cases, the same value of the indicators was recorded for both the initial and post testing.

If you look at the rankings for the factor *Self - Determination - Psychological Empowerment,* in 2 cases a negative ranking was recorded, i.e., the value of the indicator on the post-test is lower than the value on the initial testing, while in 10 cases a positive ranking was recorded, i.e. the value of the indicator on the post-test is higher than the value at the initial testing, finally in 2 cases the same value of the indicator was recorded for both the initial and post testing.

Table 41. Test Statistics Initial and Final measurement

	Z	Asymp. Sig. (2-tailed)
Motivation for Physical Activity: External Regulation (final) - Motivation for Physical Activity: External Regulation (initial)	-.420[b]	.674
Motivation for Physical Activity: Introjected Regulation (final) - Motivation for Physical Activity: Introjected Regulation (initial)	-1.093[c]	.274
Motivation for Physical Activity: Identified Regulation (final) - Motivation for Physical Activity: Identified Regulation (initial)	-1.460[b]	.144
Motivation for Physical Activity: Intrinsic Motivation (final) - Motivation for Physical Activity: Intrinsic Motivation (initial)	-.865[b]	.387
Motivation for Exercise/Working Out: External Regulation (final) - Motivation for Exercise/Working Out: External Regulation (initial)	-.893[c]	.372

Motivation for Exercise/Working Out: Introjected Regulation (final) - Motivation for Exercise/Working Out: Introjected Regulation (initial)	-.984[c]	.325
Motivation for Exercise/Working Out: Identified Regulation (final) - Motivation for Exercise/Working Out: Identified Regulation (initial)	-1.224[b]	.221
Motivation for Exercise/Working Out: Intrinsic Motivation (final) - Motivation for Exercise/Working Out: Intrinsic Motivation (initial)	-.357[b]	.721
Intrinsic motivation WEIMS (final) - Intrinsic motivation WEIMS (initial)	-.278[c]	.781
Integrated regulation WEIMS (final) - Integrated regulation WEIMS (initial)	-1.887[c]	.059
Identified regulation WEIMS (final) - Identified regulation WEIMS (initial)	-1.299[c]	.194
Introjected regulation WEIMS (final) - Introjected regulation WEIMS (initial)	-.245[b]	.806
External regulation WEIMS (final) - External regulation WEIMS (initial)	-.770[c]	.441
Amotivation WEIMS (final) - Amotivation WEIMS (initial)	-2.661[b]	**.008**
Self-efficacy PCQ (final) - Self efficacy PCQ (initial)	-2.070[c]	**.038**
Hope PCQ (final) - Hope PCQ (initial)	-1.351[c]	.177
Resilience PCQ (final) - Resilience PCQ (initial)	-1.588[c]	.112
Optimism PCQ (final) - Optimism PCQ (initial)	-.825[b]	.409
Meaning - Psychological Empowerment (final) - Meaning - Psychological Empowerment (initial)	-.103[b]	.918
Competence - Psychological Empowerment (final) - Competence - Psychological Empowerment (initial)	-1.548[c]	.122
Self - Determination - Psychological Empowerment (final) - Self - Determination - Psychological Empowerment (initial)	-2.058[c]	**.040**
Impact - Psychological Empowerment (final) - Impact - Psychological Empowerment (initial)	-.753[c]	.452

a. Wilcoxon Signed Ranks Tes

b. Based on positive ranks.

c. Based on negative ranks.

The significance of the p test is less than 0.05 ($p<0.05$) for the factors *Amotivation WEIMS, Self-efficacy PCQ, Self - Determination - Psychological Empowerment* in the first and second measurements, which means that we reject the null and accept the alternative research hypothesis , that is, it can be said, with a confidence level of 95%, that a statistically significant difference was recorded between the first and second measurements for the observed factors.

In Table 42 there is a difference between the first and the second measurement (shift) for the observed respondent and factors in the research, it can be seen from the table that the biggest shift is for the observed factor Amotivation WEIMS (-0,7371), while the lowest shift is for the factor Meaning - Psychological Empowerment (-0,0246) and Intrinsic motivation WEIMS (0,0471).

Table 42: Average indicators for the difference between first and the second meausrment

	N						Percentiles		
	Valid	Missing	$\bar{x}$	Sd	Min	Max	25	50	75
Motivation for Physical Activity: External Regulation (final - initial)	13	1	-.0769	.66446	-1.25	1.50	-.3750	.0000	.0000
Motivation for Physical Activity: Introjected Regulation (final - initial)	13	1	.2115	.72058	-1.00	1.25	-.3750	.2500	.7500
Motivation for Physical Activity: Identified Regulation (final - initial)	13	1	-.2308	.68816	-1.00	1.50	-.7500	-.2500	.1250
Motivation for Physical Activity: Intrinsic Motivation (final - initial)	13	1	-.2115	.40255	-2.75	3.00	-1.1250	-.5000	.2500

Motivation for Exercise/Working Out: External Regulation (final - initial)	12	2	.1658	.82273	-1.67	1.33	-.3300	.0000	.9175
Motivation for Exercise/Working Out: Introjected Regulation (final - initial)	13	1	.4115	1.24932	-1.67	3.00	-.5000	.3400	1.3350
Motivation for Exercise/Working Out: Identified Regulation (final - initial)	13	1	-.1046	1.28510	-1.33	3.66	-.8350	-.3400	.1650
Motivation for Exercise/Working Out: Intrinsic Motivation (final - initial)	13	1	.1023	1.56370	-1.33	3.33	-1.1650	.0000	.3300
Intrinsic motivation WEIMS (final - initial)	14	0	**.0471**	.70409	-1.34	1.00	-.6700	.1650	.6625
Integrated regulation WEIMS (final - initial)	14	0	.4050	.82013	-1.34	2.00	-.0825	.3350	.8350
Identified regulation WEIMS (final - initial)	14	0	.3807	1.29456	-2.67	2.67	-.1675	.3350	1.0825
Introjected regulation WEIMS (final - initial)	14	0	-.0950	1.34331	-2.33	2.00	-1.4225	-.1650	1.0825
External regulation WEIMS (final - initial)	14	0	.1421	.90306	-2.00	1.33	-.1675	.1650	1.0000
Amotivation WEIMS (final - initial)	14	0	**-.7371**	.81898	-2.33	.34	-1.1675	-.6650	.0000
Self-efficacy PCQ (final - initial)	13	1	.4354	.64366	-.66	1.67	.0000	.3300	.8350
Hope PCQ (final - initial)	14	0	.1786	.47463	-.75	1.00	-.2500	.2500	.5000
Resilience PCQ (final - initial)	14	0	.4764	.99211	-1.00	2.00	-.3300	.3350	1.4125
Optimism PCQ (final - initial)	14	0	.1429	.71867	-1.50	1.00	-.1250	.5000	.5000
Meaning - Psychological Empowerment (final - initial)	13	1	**-.0246**	.62989	-1.00	1.00	-.4950	.0000	.5000
Competence - Psychological Empowerment (final - initial)	14	0	.3086	.70738	-.67	1.66	-.3300	.1650	.7525
Self - Determination - Psychological Empowerment (final - initial)	14	0	.5007	1.17623	-2.67	2.67	.0000	.6700	1.0000
Impact - Psychological Empowerment (final - initial)	14	0	.1907	.78151	-1.00	1.67	-.4125	.1650	.7450

4.6 **Testing the difference in the observed factors with respect to the observed indicators**

On the following pages, testing will be carried out for the observed factors in the research (difference between the second and first measurement - shift) with regard to the observed indicators, testing will be carried out using the Mann-Whitney U test and the Kruskal-Wallis test.

Table 43. Ranks for the observed factors (difference between the second and first measurement – shift) regarding the question 1.

	Do you often feel tired, fatigued, or sleepy during the daytime, even after a "good" night's sleep	N	Mean Rank	Sum of Ranks
Motivation for Physical Activity: External Regulation (final - initial)	Yes	5	7.40	37.00
	No	8	6.75	54.00
	Total	13		
Motivation for Physical Activity: Introjected Regulation (final - initial)	Yes	5	8.30	41.50
	No	8	6.19	49.50
	Total	13		
Motivation for Physical Activity: Identified Regulation (final - initial)	Yes	5	10.00	50.00
	No	8	5.13	41.00
	Total	13		
Motivation for Physical Activity: Intrinsic Motivation (final - initial)	Yes	5	8.30	41.50
	No	8	6.19	49.50
	Total	13		

Motivation for Exercise/Working Out: External Regulation (final - initial)	Yes	5	6.40	32.00
	No	7	6.57	46.00
	Total	12		
Motivation for Exercise/Working Out: Introjected Regulation (final - initial)	Yes	5	5.30	26.50
	No	8	8.06	64.50
	Total	13		
Motivation for Exercise/Working Out: Identified Regulation (final - initial)	Yes	5	7.60	38.00
	No	8	6.63	53.00
	Total	13		
Motivation for Exercise/Working Out: Intrinsic Motivation (final - initial)	Yes	5	7.50	37.50
	No	8	6.69	53.50
	Total	13		
Intrinsic motivation WEIMS (final - initial)	Yes	6	8.58	51.50
	No	8	6.69	53.50
	Total	14		
Integrated regulation WEIMS (final - initial)	Yes	6	11.00	66.00
	No	8	4.88	39.00
	Total	14		
Identified regulation WEIMS (final - initial)	Yes	6	9.08	54.50
	No	8	6.31	50.50
	Total	14		
Introjected regulation WEIMS (final - initial)	Yes	6	8.92	53.50
	No	8	6.44	51.50
	Total	14		
External regulation WEIMS (final - initial)	Yes	6	8.50	51.00
	No	8	6.75	54.00
	Total	14		
Amotivation WEIMS (final - initial)	Yes	6	7.00	42.00
	No	8	7.88	63.00
	Total	14		
	Yes	5	9.60	48.00

Self efficacy PCQ (final - initial)	No	8	5.38	43.00
	Total	13		
Hope PCQ (final - initial)	Yes	6	10.17	61.00
	No	8	5.50	44.00
	Total	14		
Resilience PCQ (final - initial)	Yes	6	9.42	56.50
	No	8	6.06	48.50
	Total	14		
Optimism PCQ (final - initial)	Yes	6	9.08	54.50
	No	8	6.31	50.50
	Total	14		
Meaning - Psychological Empowerment (final - initial)	Yes	5	8.00	40.00
	No	8	6.38	51.00
	Total	13		
Competence - Psychological Empowerment (final - initial)	Yes	6	10.83	65.00
	No	8	5.00	40.00
	Total	14		
Self - Determination - Psychological Empowerment (final - initial)	Yes	6	10.08	60.50
	No	8	5.56	44.50
	Total	14		
Impact - Psychological Empowerment (final - initial)	Yes	6	8.08	48.50
	No	8	7.06	56.50
	Total	14		

Table 44. Test Statistics[a] for the observed factors (difference between the second and first measurement – shift) regarding the question 1

	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)	Exact Sig. [2*(1-tailed Sig.)]
Motivation for Physical Activity: External Regulation (final - initial)	18.000	54.000	-.318	.750	.833[b]
Motivation for Physical Activity: Introjected Regulation (final - initial)	13.500	49.500	-.965	.335	.354[b]
Motivation for Physical Activity: Identified Regulation (final - initial)	5.000	41.000	-2.217	.027	**.030[b]**
Motivation for Physical Activity: Intrinsic Motivation (final - initial)	13.500	49.500	-.959	.337	.354[b]
Motivation for Exercise/Working Out: External Regulation (final - initial)	17.000	32.000	-.082	.935	1.000[b]
Motivation for Exercise/Working Out: Introjected Regulation (final - initial)	11.500	26.500	-1.255	.210	.222[b]
Motivation for Exercise/Working Out: Identified Regulation (final - initial)	17.000	53.000	-.443	.658	.724[b]
Motivation for Exercise/Working Out: Intrinsic Motivation (final - initial)	17.500	53.500	-.374	.709	.724[b]
Intrinsic motivation WEIMS (final - initial)	17.500	53.500	-.846	.398	.414[b]

Integrated regulation WEIMS (final - initial)	3.000	39.000	-2.729	.006	**.005[b]**
Identified regulation WEIMS (final - initial)	14.500	50.500	-1.233	.217	.228[b]
Introjected regulation WEIMS (final - initial)	15.500	51.500	-1.099	.272	.282[b]
External regulation WEIMS (final - initial)	18.000	54.000	-.788	.431	.491[b]
Amotivation WEIMS (final - initial)	21.000	42.000	-.393	.694	.755[b]
Self-efficacy PCQ (final - initial)	7.000	43.000	-1.916	.055	.065[b]
Hope PCQ (final - initial)	8.000	44.000	-2.125	.034	**.043[b]**
Resilience PCQ (final - initial)	12.500	48.500	-1.496	.135	.142[b]
Optimism PCQ (final - initial)	14.500	50.500	-1.284	.199	.228[b]
Meaning - Psychological Empowerment (final - initial)	15.000	51.000	-.741	.459	.524[b]
Competence - Psychological Empowerment (final - initial)	4.000	40.000	-2.617	.009	**.008[b]**
Self - Determination - Psychological Empowerment (final - initial)	8.500	44.500	-2.028	.043	**.043[b]**
Impact - Psychological Empowerment (final - initial)	20.500	56.500	-.455	.649	.662[b]

a. Grouping Variable: Do you often feel tired, fatigued, or sleepy during the daytime, even after a "good" night's sleep

b. Not corrected for ties.

If you look at the significance value *for Motivation for Physical Activity: Identified Regulation (final - initial), Integrated regulation WEIMS (final - initial), Hope PCQ (final - initial), Competence - Psychological Empowerment (final - initial), Self - Determination - Psychological Empowerment (final - initial*) it can be seen that p is less than 5% $p<0.05$, so it can be said that there is a statistically significant difference with regard to the question Do you often feel tired, fatigued, or sleepy during the daytime, even after a "good" night's sleep, where the ranks are higher (the value of the indicator is higher) for respondents who state yes.

Table 45. Ranks for the observed factors regarding to question 2

	Would you like to change your weight	N	Mean Rank	Sum of Ranks
Motivation for Physical Activity: External Regulation (final - initial)	Yes	9	7.78	70.00
	No	4	5.25	21.00
	Total	13		
Motivation for Physical Activity: Introjected Regulation (final - initial)	Yes	9	7.00	63.00
	No	4	7.00	28.00
	Total	13		
Motivation for Physical Activity: Identified Regulation (final - initial)	Yes	9	7.72	69.50
	No	4	5.38	21.50
	Total	13		
Motivation for Physical Activity: Intrinsic Motivation (final - initial)	Yes	9	7.56	68.00
	No	4	5.75	23.00
	Total	13		
Motivation for Exercise/Working Out:	Yes	8	6.06	48.50
	No	4	7.38	29.50

External Regulation (final - initial)	Total	12		
Motivation for Exercise/Working Out: Introjected Regulation (final - initial)	Yes	9	7.22	65.00
	No	4	6.50	26.00
	Total	13		
Motivation for Exercise/Working Out: Identified Regulation (final - initial)	Yes	9	7.61	68.50
	No	4	5.63	22.50
	Total	13		
Motivation for Exercise/Working Out: Intrinsic Motivation (final - initial)	Yes	9	9.00	81.00
	No	4	2.50	10.00
	Total	13		
Intrinsic motivation WEIMS (final - initial)	Yes	10	7.05	70.50
	No	4	8.63	34.50
	Total	14		
Integrated regulation WEIMS (final - initial)	Yes	10	7.65	76.50
	No	4	7.13	28.50
	Total	14		
Identified regulation WEIMS (final - initial)	Yes	10	7.00	70.00
	No	4	8.75	35.00
	Total	14		
Introjected regulation WEIMS (final - initial)	Yes	10	7.10	71.00
	No	4	8.50	34.00
	Total	14		
External regulation WEIMS (final - initial)	Yes	10	7.35	73.50
	No	4	7.88	31.50
	Total	14		
Amotivation WEIMS (final - initial)	Yes	10	7.65	76.50
	No	4	7.13	28.50
	Total	14		
Self efficacy PCQ (final - initial)	Yes	9	6.78	61.00
	No	4	7.50	30.00

	Total	13		
Hope PCQ (final - initial)	Yes	10	7.10	71.00
	No	4	8.50	34.00
	Total	14		
Resilience PCQ (final - initial)	Yes	10	6.80	68.00
	No	4	9.25	37.00
	Total	14		
Optimism PCQ (final - initial)	Yes	10	7.90	79.00
	No	4	6.50	26.00
	Total	14		
Meaning - Psychological Empowerment (final - initial)	Yes	9	6.50	58.50
	No	4	8.13	32.50
	Total	13		
Competence - Psychological Empowerment (final - initial)	Yes	10	8.20	82.00
	No	4	5.75	23.00
	Total	14		
Self - Determination - Psychological Empowerment (final - initial)	Yes	10	7.30	73.00
	No	4	8.00	32.00
	Total	14		
Impact - Psychological Empowerment (final - initial)	Yes	10	6.90	69.00
	No	4	9.00	36.00
	Total	14		

Table 46: Test Statistics for the observed factors (difference between the second and first measurement – shift) regarding to question 2

	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)	Exact Sig. [2*(1-tailed Sig.)]
Motivation for Physical Activity: External Regulation (final - initial)	11.000	21.000	-1.174	.240	,330[b]
Motivation for Physical Activity: Introjected Regulation (final - initial)	18.000	28.000	.000	1.000	1,000[b]
Motivation for Physical Activity: Identified Regulation (final - initial)	11.500	21.500	-1.013	.311	,330[b]
Motivation for Physical Activity: Intrinsic Motivation (final - initial)	13.000	23.000	-.778	.437	,503[b]
Motivation for Exercise/Working Out: External Regulation (final - initial)	12.500	48.500	-.601	.548	,570[b]
Motivation for Exercise/Working Out: Introjected Regulation (final - initial)	16.000	26.000	-.311	.756	,825[b]
Motivation for Exercise/Working Out: Identified Regulation (final - initial)	12.500	22.500	-.856	.392	,414[b]

Motivation for Exercise/Working Out: Intrinsic Motivation (final - initial)	.000	10.000	-2.837	.005	**,003**[b]
Intrinsic motivation WEIMS (final - initial)	15.500	70.500	-.641	.521	.539[b]
Integrated regulation WEIMS (final - initial)	18.500	28.500	-.214	.831	.839[b]
Identified regulation WEIMS (final - initial)	15.000	70.000	-.711	.477	539[b]
Introjected regulation WEIMS (final - initial)	16.000	71.000	-.566	.571	.635[b]
External regulation WEIMS (final - initial)	18.500	73.500	-.216	.829	.839[b]
Amotivation WEIMS (final - initial)	18.500	28.500	-.215	.829	.839[b]
Self-efficacy PCQ (final - initial)	16.000	61.000	-.311	.756	.825[b]
Hope PCQ (final - initial)	16.000	71.000	-.582	.561	.635[b]
Resilience PCQ (final - initial)	13.000	68.000	-.998	.318	.374[b]
Optimism PCQ (final - initial)	16.000	26.000	-.592	.554	.635[b]
Meaning - Psychological Empowerment (final - initial)	13.500	58.500	-.703	.482	.503[b]
Competence - Psychological Empowerment (final - initial)	13.000	23.000	-1.003	.316	.374[b]
Self - Determination - Psychological Empowerment (final - initial)	18.000	73.000	-.287	.774	.839[b]

Impact - Psychological Empowerment (final - initial)	14.000	69.000	-.854	.393	.454[b]

a. Grouping Variable: Would you like to change your weight
b. Not corrected for ties.

If you look at the significance value for Motivation for Exercise/Working Out: Intrinsic Motivation (final - initial), you can see that p is less than 5% $p<0.05$, so it can be said that there is a statistically significant difference with regard to the question Would you like to change your weight, where the ranks are higher (the value of the indicator is higher) for respondents who say yes.

Table 47: Ranks for the observed factors (difference between the second and first measurement – shift) regarding the question 3

	Please rate your pain from 0 (no pain) to 10 (worst imaginable pain)	N	Mean Rank
Motivation for Physical Activity: External Regulation (final - initial)	2	3	7.00
	3	1	7.00
	4	5	5.80
	6	3	7.00
	Total	12	.
Motivation for Physical Activity: Introjected Regulation (final - initial)	2	3	8.83
	3	1	8.00
	4	5	7.00
	6	3	2.83
	Total	12	
Motivation for Physical Activity: Identified Regulation (final - initial)	2	3	9.67
	3	1	4.50
	4	5	6.30
	6	3	4.33

	Total	12	
Motivation for Physical Activity: Intrinsic Motivation (final - initial)	2	3	8.50
	3	1	9.50
	4	5	6.60
	6	3	3.33
	Total	12	
Motivation for Exercise/Working Out: External Regulation (final - initial)	2	3	6.67
	3	1	3.50
	4	5	6.90
	6	3	6.67
	Total	12	
Motivation for Exercise/Working Out: Introjected Regulation (final - initial)	2	3	7.17
	3	1	2.50
	4	5	7.90
	6	3	4.83
	Total	12	
Motivation for Exercise/Working Out: Identified Regulation (final - initial)	2	3	7.33
	3	1	2.50
	4	5	7.00
	6	3	6.17
	Total	12	
Motivation for Exercise/Working Out: Intrinsic Motivation (final - initial)	2	3	7.33
	3	1	2.00
	4	5	6.60
	6	3	7.00
	Total	12	
Intrinsic motivation WEIMS (final - initial)	2	3	9.33
	3	1	5.50
	4	6	5.25
	6	3	8.67
	Total	13	
Integrated regulation WEIMS (final - initial)	2	3	12.00
	3	1	1.00

	4	6	7.00
	6	3	4.00
	Total	13	
Identified regulation WEIMS (final - initial)	2	3	8.00
	3	1	3.00
	4	6	7.83
	6	3	5.67
	Total	13	
Introjected regulation WEIMS (final - initial)	2	3	8.83
	3	1	5.00
	4	6	4.92
	6	3	10.00
	Total	13	
External regulation WEIMS (final - initial)	2	3	7.50
	3	1	8.50
	4	6	6.00
	6	3	8.00
	Total	13	
Amotivation WEIMS (final - initial)	2	3	5.33
	3	1	10.50
	4	6	6.00
	6	3	9.50
	Total	13	
Self efficacy PCQ (final - initial)	2	2	10.00
	3	1	6.00
	4	6	5.08
	6	3	7.17
	Total	12	
Hope PCQ (final - initial)	2	3	7.67
	3	1	1.00
	4	6	6.75
	6	3	8.83
	Total	13	

Resilience PCQ (final - initial)	2	3	8.67
	3	1	1.50
	4	6	6.50
	6	3	8.17
	Total	13	
Optimism PCQ (final - initial)	2	3	9.83
	3	1	1.00
	4	6	7.00
	6	3	6.17
	Total	13	
Meaning - Psychological Empowerment (final - initial)	2	3	9.33
	3	1	5.00
	4	6	5.00
	6	2	7.50
	Total	12	
Competence - Psychological Empowerment (final - initial)	2	3	8.00
	3	1	3.50
	4	6	7.42
	6	3	6.33
	Total	13	.
Self - Determination - Psychological Empowerment (final - initial)	2	3	7.67
	3	1	3.00
	4	6	6.75
	6	3	8.17
	Total	13	
Impact - Psychological Empowerment (final - initial)	2	3	7.17
	3	1	1.00
	4	6	7.33
	6	3	8.17
	Total	13	

Table 48: Test Statistics[a,b] for the observed factors (difference between the second and first measurement – shift) regarding the question 3

	Kruskal-Wallis H	df	Asymp. Sig.
Motivation for Physical Activity: External Regulation (final - initial)	.402	3	.940
Motivation for Physical Activity: Introjected Regulation (final - initial)	4.744	3	.192
Motivation for Physical Activity: Identified Regulation (final - initial)	3.800	3	.284
Motivation for Physical Activity: Intrinsic Motivation (final - initial)	3.975	3	.264
Motivation for Exercise/Working Out: External Regulation (final - initial)	.783	3	.854
Motivation for Exercise/Working Out: Introjected Regulation (final - initial)	2.787	3	.426
Motivation for Exercise/Working Out: Identified Regulation (final - initial)	1.545	3	.672
Motivation for Exercise/Working Out: Intrinsic Motivation (final - initial)	1.878	3	.598
Intrinsic motivation WEIMS (final - initial)	3.019	3	.389
Integrated regulation WEIMS (final - initial)	9.251	3	**.026**
Identified regulation WEIMS (final - initial)	1.905	3	.592
Introjected regulation WEIMS (final - initial)	4.438	3	.218
External regulation WEIMS (final - initial)	.818	3	.845
Amotivation WEIMS (final - initial)	3.109	3	.375
Self efficacy PCQ (final - initial)	2.985	3	.394
Hope PCQ (final - initial)	3.354	3	.340

Resilience PCQ (final - initial)	2.961	3	.398
Optimism PCQ (final - initial)	4.605	3	.203
Meaning - Psychological Empowerment (final - initial)	3.287	3	.349
Competence - Psychological Empowerment (final - initial)	1.198	3	.753
Self - Determination - Psychological Empowerment (final - initial)	1.482	3	.687
Impact - Psychological Empowerment (final - initial)	2.737	3	.434

a. Kruskal Wallis Test
b. Grouping Variable: Please rate your pain from 0 (no pain) to 10 (worst imaginable pain)

If you look at the significance value for Integrated regulation WEIMS, you can see that p is less than 5% $p<0.05$, so it can be said that there is a statistically significant difference with regard to the question please rate your pain from 0 (no pain) to 10 (worst imaginable pain), where the ranks are the highest (the value of the indicator is the highest) for respondents who state 2.

Table 49. Ranks for the observed factors (difference between the second and first measurement – shift) regarding the question 4

	How much does your pain/problem interfere with your Daily Activities	N	Mean Rank	Sum of Ranks
Motivation for Physical Activity: External Regulation (final - initial)	None	6	4.83	29.00
	20%	5	7.40	37.00
	Total	11		
	None	6	7.00	42.00
	20%	5	4.80	24.00

Motivation for Physical Activity: Introjected Regulation (final - initial)	Total	11		
Motivation for Physical Activity: Identified Regulation (final - initial)	None	6	5.58	33.50
	20%	5	6.50	32.50
	Total	11		
Motivation for Physical Activity: Intrinsic Motivation (final - initial)	None	6	4.92	29.50
	20%	5	7.30	36.50
	Total	11		
Motivation for Exercise/Working Out: External Regulation (final - initial)	None	6	6.50	39.00
	20%	5	5.40	27.00
	Total	11		
Motivation for Exercise/Working Out: Introjected Regulation (final - initial)	None	6	6.00	36.00
	20%	5	6.00	30.00
	Total	11		
Motivation for Exercise/Working Out: Identified Regulation (final - initial)	None	6	6.08	36.50
	20%	5	5.90	29.50
	Total	11		
Motivation for Exercise/Working Out: Intrinsic Motivation (final - initial)	None	6	5.17	31.00
	20%	5	7.00	35.00
	Total	11		
Intrinsic motivation WEIMS (final - initial)	None	7	6.36	44.50
	20%	5	6.70	33.50
	Total	12		
Integrated regulation WEIMS (final - initial)	None	7	7.36	51.50
	20%	5	5.30	26.50
	Total	12		
Identified regulation WEIMS (final - initial)	None	7	8.43	59.00
	20%	5	3.80	19.00
	Total	12		
	None	7	6.64	46.50

Introjected regulation WEIMS (final - initial)	20%	5	6.30	31.50
	Total	12		
External regulation WEIMS (final - initial)	None	7	7.07	49.50
	20%	5	5.70	28.50
	Total	12		
Amotivation WEIMS (final - initial)	None	7	4.36	30.50
	20%	5	9.50	47.50
	Total	12		
Self efficacy PCQ (final - initial)	None	6	6.00	36.00
	20%	5	6.00	30.00
	Total	11		
Hope PCQ (final - initial)	None	7	6.93	48.50
	20%	5	5.90	29.50
	Total	12		
Resilience PCQ (final - initial)	None	7	7.36	51.50
	20%	5	5.30	26.50
	Total	12		
Optimism PCQ (final - initial)	None	7	8.36	58.50
	20%	5	3.90	19.50
	Total	12		
Meaning - Psychological Empowerment (final - initial)	None	7	6.21	43.50
	20%	4	5.63	22.50
	Total	11		
Competence - Psychological Empowerment (final - initial)	None	7	7.21	50.50
	20%	5	5.50	27.50
	Total	12		
Self - Determination - Psychological Empowerment (final - initial)	None	7	6.86	48.00
	20%	5	6.00	30.00
	Total	12		
Impact - Psychological Empowerment (final - initial)	None	7	7.64	53.50
	20%	5	4.90	24.50

	Total	12		

Table 50. Test Statistics[a] for the observed factors (difference between the second and first measurement – shift) regarding the question 4

	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)	Exact Sig. [2*(1-tailed Sig.)]
Motivation for Physical Activity: External Regulation (final - initial)	8.000	29.000	-1.394	.163	.247[b]
Motivation for Physical Activity: Introjected Regulation (final - initial)	9.000	24.000	-1.111	.267	.329[b]
Motivation for Physical Activity: Identified Regulation (final - initial)	12.500	33.500	-.462	.644	.662[b]
Motivation for Physical Activity: Intrinsic Motivation (final - initial)	8.500	29.500	-1.195	.232	.247[b]
Motivation for Exercise/Working Out: External Regulation (final - initial)	12.000	27.000	-.554	.580	.662[b]
Motivation for Exercise/Working Out: Introjected Regulation (final - initial)	15.000	30.000	.000	1.000	1.000[b]
Motivation for Exercise/Working Out: Identified Regulation (final - initial)	14.500	29.500	-.093	.926	.931[b]
Motivation for Exercise/Working Out: Intrinsic Motivation (final - initial)	10.000	31.000	-.932	.351	.429[b]
Intrinsic motivation WEIMS (final - initial)	16.500	44.500	-.164	.870	.876[b]

Integrated regulation WEIMS (final - initial)	11.500	26.500	-.985	.325	.343[b]
Identified regulation WEIMS (final - initial)	4.000	19.000	-2.212	.027	**.030[b]**
Introjected regulation WEIMS (final - initial)	16.500	31.500	-.163	.871	.876[b]
External regulation WEIMS (final - initial)	13.500	28.500	-.657	.511	.530[b]
Amotivation WEIMS (final - initial)	2.500	30.500	-2.484	.013	**.010[b]**
Self-efficacy PCQ (final - initial)	15.000	30.000	.000	1.000	1.000[b]
Hope PCQ (final - initial)	14.500	29.500	-.506	.613	.639[b]
Resilience PCQ (final - initial)	11.500	26.500	-.980	.327	.343[b]
Optimism PCQ (final - initial)	4.500	19.500	-2.272	.023	**.030[b]**
Meaning - Psychological Empowerment (final - initial)	12.500	22.500	-.287	.774	.788[b]
Competence - Psychological Empowerment (final - initial)	12.500	27.500	-.819	.413	.432[b]
Self - Determination - Psychological Empowerment (final - initial)	15.000	30.000	-.414	.679	.755[b]
Impact - Psychological Empowerment (final - initial)	9.500	24.500	-1.313	.189	.202[b]

a. Grouping Variable: How much does your pain/problem interfere with your Daily Activities
b. Not corrected for ties.

If you look at the significance value for identified regulation *WEIMS (final - initial), amotivation WEIMS (final - initial),*Optimism PCQ(final-initial) you can see that p is less than 5% $p<0.05$, so it can be said that there is a statistically significant difference with regard to the question *how much does your pain/problem interfere with your Daily Activities*, whereby the ranks for identified regulation WEIMS (final - initial) and Optimism PCQ (final-initial) are higher (the value of the indicator is higher) for

respondents who state None, while the ranks for Amotivation WEIMS (final - initial) higher (the value of the indicator is higher) for respondents who state 20%.

Table 51. Descriptive Statistics Initial and Final self-measurement

	N	$\bar{x}$	Sd	Min	Max	Percentiles		
						25th	50th (Median)	75th
Lateral sit through (Initial)	8	38.88	18.635	19	76	22.50	36.00	47.50
Elbow plank taping (Initial)	8	55.63	23.120	30	90	37.75	47.00	82.00
Jump squat 180 (Initial)	8	57.13	25.520	25	98	33.50	56.00	79.00
Time spent crawling (Initial)	8	94.00	43.599	50	180	60.50	87.50	123.75
Lateral sit through (final)	8	49.88	15.977	34	84	40.25	44.00	58.50
Elbow plank taping (final)	8	6650	18.784	46	90	47.00	64.00	86.00
Jump squat 180 (final)	8	72.50	26.387	42	109	44.25	75.00	96.50
Time spent crawling (final)	7	149.0000	34.96188	92.00	192.00	120.0000	160.0000	180.0000

Table 52. Ranks Initial and Final Self measurement

		N	Mean Rank	Sum of Ranks
Lateral sit through (final) – Lateral sit through (Initial)	Negative Ranks	1[a]	1.00	1.00
	Positive Ranks	7[b]	5.00	35.00
	Ties	0[c]		
	Total	8		
Elbow plank taping (final) – Elbow plank taping (Initial)	Negative Ranks	1[d]	2.00	2.00
	Positive Ranks	7[e]	4.86	34.00
	Ties	0[f]		
	Total	8		
Jump squat 180 (final) – Jump squat 180 (Initial)	Negative Ranks	1[g]	2.00	2.00
	Positive Ranks	7[h]	4.86	34.00
	Ties	0[i]		
	Total	8		

Time spent crawling (final) – Time spent crawling (Initial)	Negative Ranks	1[j]	1.00	1.00
	Positive Ranks	6[k]	4.50	27.00
	Ties	0[l]		
	Total	7		

a. Test lateral sit through (final) < lateral sit through (Initial)

b. Test lateral sit through (final) > lateral sit through (Initial)

c. Test lateral sit through (final) = lateral sit through (Initial)

Table 53. Test Statistics. Initial and Final self-measurement

	Lateral sit through test (final) – Lateral sit through test (Initial)	Elbow Plank Taping (final) – Elbow plank taping (Initial)	Jump Squat 180 (final) – Jump Squat 180 (Initial)	Time spent crawling (final) – Time spent crawling (Initial)
Z	-2.383[b]	-2.243[b]	-2.240[b]	-2.201[b]
Asymp. Sig. (2-tailed)	**.017**	**.025**	**.025**	**.028**

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

The significance of the p test is less than 0.05 ($p<0.05$) for all variables in the first and second measurements, which means that we reject the null and accept the alternative research hypothesis, that is, it can be said, with a confidence level of 95%, that a statistically significant difference was recorded between the first and second measurements for the observed questions.

CHAPTER V:

DISCUSSIONS & CONCLUSION

5.1 Introduction

This chapter contains a discussion of the findings related to the theoretical framework that underpins this research, behavioral models, literature overview, research question and objectives, and how they are related to the set hypothesis.

This research investigated the impact of physical activity on the behavioral change of an individual, with extensive present fitness status overview and health risk assessment, including pain and other comorbidities that could interfere with movement and overall level of physical activity.

Also, it provides information about the changes in the fitness level of participants using specific functional body moving patterns, education, and motivational interventions delivered online aiming to increase the level of physical activity and create a long-term exercise habit.

According to mentioned earlier, this study has measured motivation, especially intrinsic one, which originated from exercising and its impact on empowerment among employees which eventually will increase employee engagement, creativity, learning capacity, and performance, i.e., productivity.

Due to the increase in sedentary lifestyles especially in this post-pandemic new lifestyle, this chapter will describe the possibility of helping individuals to make healthy choices that could be a milestone to be more productive, effective, engaged, and empowered employees and discuss health sustainability related to workplace settings.

Two questionnaires were filled out at the beginning of the study (Lifestyle and Health Risk Assessment and Physical Therapy questionnaire) since they gave health and lifestyle information about participants, and four of them were filled out before and after

the physical activity intervention of 9 weeks, 63 days (Motivation for Doing Exercise/Physical Activity, WEIMS-Work Extrinsic and Intrinsic Motivation Scale, Psychological Capital Questionnaire/PCQ, Psychological Empowerment Questionnaire/PEQ)

Looking at the findings about demographics, participants' health risk, lifestyle, and pain present it could be seen that at the beginning of the research, they were moderately active two to three days a week, approximately 120 minutes weekly which is still below the recommended WHO 150 min of moderate activity per week (Table 1).

At the beginning of the study, there were 20 participants, 2 of them canceled the participation due to private and personal responsibilities and 4 of them didn't fill out the final questionnaires, and as such they were not appropriate for analysis.

5.2 Discussion of the Initial and Final Questionnaires

Understanding how different types of motivation contribute to exercise behavior is an important first step in identifying ways to increase exercise among individuals (Na Li, Cheng, Yu & Zhu 2023).

To confirm the objective and investigate the influence of exercise on intrinsic motivation level, two questionnaires were used, both coming from SDT theory, RM-4FM, and WEIMS. An unexpected result happens when analyzing the RM-4FM questionnaire to establish the difference between the observed indicators, individually for the observed questions about motivation for physical activity and exercise/working out.

There was no statistically significant difference for all factors observed at the beginning and end of the study (Table 26, Table 29). It could implicate that those who applied for the program were already motivated for physical activity and exercise, especially because some statistically significant ranks were visible on the WEIMS scale

(Table 32), which means that work motivation has changed, while motivation for exercise doesn't. It is consistent with a set hypothesis to prove that exercise could impact motivational level which is crucial for increasing the level of engagement, empowerment, and productivity.

On the contrary, while testing the difference in the observed factors in RM4-FM for the observed indicators there was a statistically significant difference in the question Would you like to change your weight, where the ranks are higher (the value of the indicator is higher) for respondents who say yes (Table 45, Table 46) using the Mann-Whitney U test and the Kruskal-Wallis test which explains that even though only 28,5 % of them is concern about the impact of their weight on health, much higher figures, 71,4 % of participants, wanted to change their weight (Table 6, Figure 2).

It could be taken into account as a possible valuable factor when constructing and delivering a plan of health promotion activities within a company including the study from Wilson et al. (2004) which suggests that various types of motivation have been found to influence effort expended during exercise sessions as well as intentions to continue exercising. Mullan & Markland (1997) have examined individuals at various stages of exercise adoption and found that individuals with tendencies toward more regular exercise are more self-determined in their motivation.

SDT is a general theory that has frequently been applied in the exercise domain. Intrinsic motivation is associated with persistence at a task as well as psychological health and well-being (Wilson et al., 2004). Despite these findings, it has been suggested that some people may persist in sports and exercise despite being extrinsically motivated (Mullan & Markland, 1997).

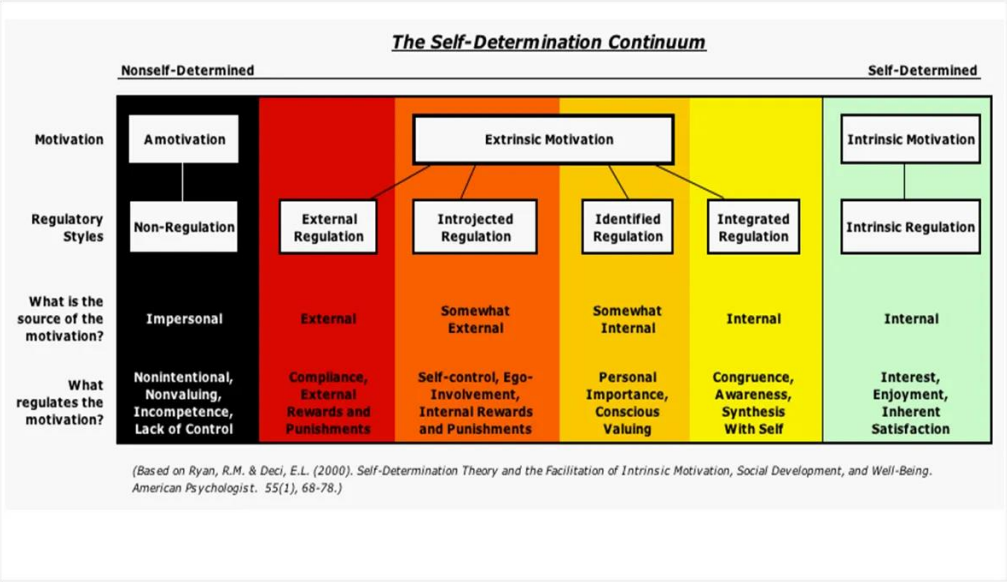
Overall, exercise-related motivation could vary according to the amount of exercise an individual undertakes. Previous research has considered exercise behavior in

several different ways, from intention to exercise and self-reported exercise frequency (Mullan & Markland, 1997) to a measure including exercise intensity (Wilson et al., 2004) and indicates that different types of behavior (e.g., exercise frequency and intensity) may be differentially regulated. In Table 2 and Figure 1, there is data about exercise intensity, but due to the small sample size, it is not possible to correlate those exercise intensities with the motivation type and find the eventual difference between those who are concerned about the impact that weight has health or those who are concerned about losing weight.

The priority of exercise and healthy lifestyle behavior changes over the lifespan, but the type of motivation related to a specific activity, based on the SDT continuum could explain the initial step in habit formation and adoption of the long-term healthy choices related to physical activity but for such analysis bigger sample size and control group is necessary.

Six motivational subscales were assessed within WEIMS (Work Extrinsic and Intrinsic Scale), coming from self-determination theory, at the beginning and the end of the study.

Figure 15. SDT continuum



The ranks for the question Because it has become a fundamental part of who I am show a positive rank for Integrated regulation (Table 32) which is the most self-determined form of extrinsic motivation and stems from evaluated identifications that are in alignment with self-endorsed values, goals, and needs (Deci & Ryan, 2002). Data suggests improvement in integrated motivation which explains the impact of exercise on work motivation.

With integrated regulation, people have a full sense that the behavior is an integral part of who they are, that it emanates from their sense of self and is thus self-determined. The difference observed from the initial and final testing indicates that if integrated, employees not only identify with the importance of the activities which they do at their workplace but it becomes a part of who they are.

Integrated regulation is theorized to represent the most developmentally advanced form of extrinsic motivation, and it shares some qualities with the other type of autonomous motivation, namely, intrinsic motivation. Integrated regulation does not,

however, become intrinsic motivation but is still considered extrinsic motivation (albeit an autonomous form of it) because the motivation is characterized not by the person being interested in the activity but rather by the activity being instrumentally important for personal goals.

Integration involves identifying that engaging in the behavior is an important part of one's identity, is proposed to be the most autonomous of the external regulations, and tends to be associated with behavioral persistence and more adaptive psychological outcomes (Deci & Ryan, 2008). Research by Koestner and Losier (2002) said that intrinsic motivation yielded better performance on interesting tasks but that autonomous and extrinsic motivation yielded better performance on tasks that are not in themselves interesting but that are important and require discipline or determination (Gagne & Deci, 2005).

Furthermore, self-determination theory has detailed the processes through which extrinsic motivation can become autonomous, and it suggests that intrinsic motivation (based on interest) and autonomous extrinsic motivation (based on importance) are both related to performance, satisfaction, trust, and well-being in the workplace. Therefore, it could not be confirmed the set hypothesis of increasing the intrinsic motivational level due to increased physical activity, implicates the importance of performance development and overall productivity.

Because extrinsically motivated behaviors are not inherently interesting and thus must initially be externally prompted, the primary reason people are likely to be willing to do the behaviors is that they are valued by significant others to whom they feel (or would like to feel) connected, whether that be a family, a peer group, or a society. This suggests that the groundwork for facilitating internalization is providing a sense of

belongingness and connectedness to the persons, group, or culture disseminating a goal, or what in SDT is called a sense of relatedness.

The more one internalizes the reasons for an action and assimilates them to the self, the more one's extrinsically motivated actions become self-determined. Integrated forms of motivation share many qualities with intrinsic motivation, being both autonomous and unconflicted. However, they are still extrinsic because behavior motivated by integrated regulation is done for its presumed instrumental value for some outcome that is separate from the behavior, even though it is volitional and valued by the self.

The more autonomous extrinsic motivation is associated with greater engagement (Connell & Wellborn, 1990), better performance (Miserandino, 1996), less dropping out (Vallerand & Bissonnette, 1992), higher quality learning (Grolnick & Ryan, 1987), and greater psychological well-being (Sheldon & Kasser, 1995), among other outcomes.

Those results correlate also with Social cognitive theory (SCT), which emphasizes the role of social and cognitive factors in shaping behaviors. According to this theory, individuals learn by observing others and by receiving feedback on their behavior. The theory describes the influence of individual experiences, the actions of others, and environmental factors on individual healthy behaviors.

Even though analyzing the WEIMS scale didn't confirm big changes in intrinsic motivation level, only changes in integrated regulation there are individual differences in the effectiveness of the intervention, such that certain employees respond better to the intervention than others, but due to small sample size, it was not possible to analyze factors that influence it, such as age, gender, and baseline physical activity levels. The lowest rank for intrinsic motivation WEIMS (Table 42) though is not talking against the

study objectives due to the possible process of internalization and time constraints related to it.

Another Question within WEIMS is *I don't know why, we are provided with unrealistic working conditions, I don't know, too much is expected of us* shows a statistically significant decrease in Amotivation in the first and second measurements (Table 32). Also, a statistically significant difference was recorded between the first and second measurements for the factor Amotivation WEIMS (Table 41)

Observing factor Amotivation not just by questions yet subjects and factors in the study it can be seen that the biggest shift (the difference between the first and the second measurement) among all analyzed factors was recorded for the factor Amotivation WEIMS (-0.7371) (Table 42.), as well as the significance of the p test (less than 0.05) for Amotivation factor showed statistical difference.

That is an indication of great importance knowing that when amotivated, a person's behaviour lacks intentionality and a sense of personal causation. Amotivation results from not valuing an activity (Ryan, 1995), not feeling competent to do it (Deci, 1975), or not believing it will yield a desired outcome (Seligman, 1975).

Amotivation is the absence of motivation, a state of acting passively or not intending to act which implies no motivation towards an activity or that the employee has a feeling of not possessing the needed competence for the activity (Gagné & Deci, 2005).

Amotivation is linked to behavioral disengagement and negative psychological conditions (Ryan & Deci, 2000). Therefore, those findings support the idea of the SDT continuum and the effects that exercise has on motivation and job satisfaction.

Work motivation, though is said to be linked to the delivery of quality service by enhancing workers' performance as well as directing them toward personal and cooperation goals (Alhassan et al., 2013; Elmadag et al., 2006; Peters et al., 2010).

Highly motivated workers are the key component of successful health system performance (Peters et al., 2010).

It supports also the Job Demand Resource Model where Physical activity can be considered a job resource, as it can provide employees with the motivation needed to perform their job demands. Workers are consequently more likely to invest in their work and be engaged (Bakker & Demerouti, 2007).

According to other studies, work motivation may be related to demographic variables such as gender (Buelens & Van den Broeck, 2007; Kanfer and Ackerman, 2000). Men and women have different motivations against salary and work–family relationships (Buelens & Van den Broeck, 2007), but a small sample size with the prevalence of women in this study, it cannot be confirmed within this research.

As discussed, SDT is a useful theory in this research as it describes the motivation and its changes. To get more detailed insights it would be useful to measure not just the difference between the first and second measurement, and the shift between final and initial testing, yet the differentiation of the individual types of motivation for exercise and for work to compare the relatedness between, and follow the changes on an individual level. That could help in finding the most prevalent types of personalities that are willing to participate in such health promotion programs and also identify those characters that are not attracted to exercise. Such analysis would help to create the best possible solution for involving as many employees within one company to collaborate, to invest in their health, and take advantage of physical activity and such lifestyle behaviors.

From 14 participants 2 were men, 12 were women. Most of the participants claim lower back pain, knee pain, and problems in the neck and shoulder area which is consistent with other researches on this topic (Table 10). According to several studies,

sedentary work leads to poor postures, flexion postures adopted during long periods of work, associated with repetition of tasks, causing greater tension in muscle and ligament structure, thus, increasing the prevalence of work-related musculoskeletal injuries (Arslan et al., 2019; Baker et al., 2013; Gonzalez et al., 2008; Juul-Kristensen et al., 2004; Paksaichol et al., 2012; Smith et al., 2019; Waongenngarm et al., 2020; Ye et al., 2017).

Also, the cervical and lumbar regions are the most affected, followed by disorders in at least one region of the upper limbs (Akodu & Akinfeleye, 2015; Baker et al., 2018 Eijckelhof et al. 2013; Eltayeb et al., 2007; Gerr et al., 2002; Gobbo et al., 2019; Holzgreve et al., 2018; Kaliniene et al., 2013; Valipour Noroozi et al., 2015;) which is consistent with this study results.

These figures contribute to a mounting socioeconomic burden. For instance, in 2013, low back pain and neck-shoulder pain were reported to account for the third-highest amount of healthcare spending in the United States (Dieleman et al., 2016).

On a visual analog pain scale from 1-10, the higher reported pain number is 6 (23,1%) whereas no pain is attributed only for 7,7 % of participants (Table 8, Figure 3) After the research program, 16,7 % of participants were with no pain (Table 14, Figure 6).

The sample size wa too small to talk about percentages but what can be seen in Table 9 and Figure 4; 41,7 % of participants said this kind of pain interferes with 20% of their daily activities. Those who claim that pain interferes with 20% of their daily activities, have higher levels of amotivation calculating the ranks (Table 50) while those who didn't have pain that interfere with daily activities have a higher level of identified regulation (WEIMS scale) and optimism (PCQ) (Table 50).

Youssef-Morgan & Luthans (2015) have defined optimism as a generalized positive outlook and expectancy of an individual toward external situations while Cavus

and Gocken (2015) have defined optimism in terms of the mental and physical health of an individual. It has been mentioned that optimistic people working in an organization are more likely to expect positive outcomes from any situation, which can lead to a reduction of work-induced stress and depression. Leaders with an optimistic attitude expect positive results from their subordinates, which, in turn, motivates them to work harder. Moreover, it also drives the employees to bear a positive outlook toward their job role and the organization as a whole. Optimism consists of making positive attributions about current and future success (Vuyk & Codas, 2019).

In Table 47 significance value for Integrated regulation at the WEIMS scale can be seen, regarding to the question *please rate your pain from 0 (no pain) to 10 (worst imaginable pain)*, which shows higher integrated regulation for those with lower pain scores.

The findings indicate that pain could interfere not just with the possibility of being active but the influence work motivation and a general expectation that events in the future will be positive (Carver & Scheier, 2002). Those findings support the objective of examining the impact of functional movement on pain decrease and suggest that pain interference is an important starting point when planning and delivering physical activity intervention.

Recent reviews investigating the effects of physical exercise on the health of office workers (Abdin et al., 2018; Gobbo et al., 2019; Louw et al, 2017) reported the significant and protective effects of physical exercise on musculoskeletal pain symptoms, i.e., neck pain and low back pain (Gobbo et al., 2019; Louw et al, .2017; Suni et al., 2017) with some studies indicating a significant association between physical exercise and quality of life (Arruda, 2019; Gobbo et al., 2019; Nguyen et al., 202; Suni et al., 2017).

In addition, the findings are consistent with the results from Booth et al. (2017), who argue that physical exercise has an impact on pain reduction, which consequently improves the participant's physical performance and psychological status. This is due to exercise-induced analgesia, as well as structural and functional adaptations that occur in the brain (Booth et al., 2017).

Even previous studies argue that physical exercise increases levels of endocannabinoids (Raichlen et al., 2013) endorphins (Boecker et al., 2008), serotonin (Wipfli et al., 2011), and dopamine (Berse et al., 2015), it is important to consider whether pain is chronic or acute character. It is important to do no harm and therefore, a detailed assessment and individual approach should take place.

Performing physical activity makes us obtain energy resources that can be categorized into three types; *physical resources*, such as better aerobic or cardiorespiratory capacity or greater muscle power; *cognitive resources* which according to Yeung (1996) can be a good mental distractor from job demands; and *emotional resources*, due to activation of the left prefrontal cortex and during the exercise and, as explained above, released neurotransmitters that are related to pleasure, motivation, and regulation of emotions (Basso & Suzuki, 2017).

Those findings are consistent with the findings mentioned above and with the results described in Table 43 and Table 44 measuring the difference from the second and first measurement- shift for the following observed factors regarding the question, *Do you often feel tired, fatigued, or sleepy during the daytime, even after a "good" night's sleep.* Due to higher ranks for the observed factors the data indicate that exercise/physical activity positively influences further motivation for physical activity (Identified regulation), on integrated regulation within work motivation scale WEIMS, on Hope

within Psychological Capital questionnaire, Competence and Self - Determination within Psychological Empowerment.

The mentioned data indicates the impact of exercise on psychological capital, psychological empowerment, and work and further exercise motivation especially in times when you feel tired. It shows the power that physical activity has on our body and mind. Those findings are consistent with a theoretical framework that underpins this research, the biopsychosocial model of health, where physical health benefits can lead to increased energy, reduced fatigue, and improved mental clarity, all of which are important factors in enhancing productivity.

It also describes the importance of shifting the focus on those who just need to start the physical activity program because body and mind are responding to the intervention, whether you want it or not, only time is needed. In their meta-analysis Wender et al. (2022) also revealed that exercise can reduce fatigue while increasing energy, especially when starting an exercise routine,

Physical activity impacts stress reduction (Suzuki & Fitzpatrick 2015). Healthy employees who feel good, are resilient in the face of stressful situations, experience positive emotions, and have better performance in terms of economic or quality results (Salanova et al., 2012, Salanova et al., 2019). Along these lines, there is evidence that organizations that are considered healthy adopt physical intervention mechanisms aimed at increasing positive emotional states and collaterally, performance (Nägel et al., 2015).

Nägel, Sonnentag, and Kühnel (2015) show that on the days when employees do physical activity after their workday, they perceive an improvement in their positive affect, understood as the presence of positive emotional states, and in the serenity, they experience before going to bed. Moreover, these benefits at the emotional level extend to the organizational level because there is ample evidence that positive affective states are

important antecedents of good work results and success (Erez & Isen, 2002; Ilies & Judge, 2005; Lyubomirsky et al., 2005; Tsai et al., 2007). Along these lines, recently, non-sedentary people were shown to be more empathetic and more absorbed in their work tasks (Gil-Beltrán et al., 2020).

Another possible explanation would be that physical exercise promotes vigor through a motivational process that meets the basic need for autonomy, relationship, and competence, as postulated in the Self-Determination theory (Ryan & Deci, 2000).

The study mentioned in the literature overview by Etemadi et al. (2016), based on data from 60 articles between 1969 to 1999 and 2000 and 2015 reveals that there is a direct relationship between company performance and productivity and fitness. Effects were seen in job satisfaction and commitment, cognition and memory, self-confidence/self-efficacy, decreased weight/increased physical activity, and psychological well-being and stress level which supports the findings from this study.

Higher ranks for identified regulation in exercise motivation refers to being motivated to perform a behavior because it is personally significant and results in outcomes that are valued by the individual (Deci & Ryan, 1985; Ryan & Deci, 2000) Integrated regulation, though is represented by an individual's belief that a behavior is an important part of his or her identity and is consistent with his or her values (Ryan & Deci, 2000) which explains the importance of exercise on work motivation and job satisfaction.

Being self-determination means to have a sense of having a choice in initiating and regulating actions (Conger & Kanungo, 1988; Thomas & Velthouse 1990). It explains how an individual believes in his or her capability to be effective, while Competence refers to the belief in one’s capability to successfully perform work activities.

Hope is defined as the positive motivational state of an individual which is based on the interactively derived sense of successful agency and pathways. From the organizational perspective, Cavus and Gokcen (2015) have mentioned that hope is the internalized willpower and determination of an individual to invest the energy to materialize organizational objectives.

The hope of a leader influences the motivation, job satisfaction, and performance of the team members. It has been mentioned that hope supports the desire for positive outcomes and provides a feeling of emotional well-being. Hope has also been defined as a feature that drives people emotionally to voluntarily commit to their job roles and perform to the best of their abilities. Psychological empowerment is a key source of employee engagement and work motivation regulation.

All those findings focus on the importance of workplace physical activity interventions due to positive behavioral changes in an individual. Those findings are consistent with the second hypothesis which said that participants will show higher productivity. It could be concluded that an increased level of work motivation, increased level of hope, competence, and self-determination are all predispositions for higher levels of productivity. Moreover, an impact for further exercise motivation explains the circle for long term habit formation.

A statistically significant difference was recorded between the first and second measurements for the question *I have significant autonomy in determining how I do my job* which explains the determination variable, i.e., empowerment factor. That refers to the main research question of how physical activity empowerment among employees enhances business productivity.

The conceptual structure of psychological empowerment proposed by Thomas and Velthouse (1990) is widely accepted. They believe that psychological empowerment

is a combination of four cognitive components: a sense of impact, competence, meaningfulness, and choice.

Psychological mechanisms by which empowerment enhances engagement at work are based on the Healthy and Resilient Organization (HERO) Model (Salanova et al., 2012). A HERO is defined as an organization that makes systematic, planned, and proactive efforts to improve employees, teams, and organizational processes and outcomes and can maintain positive adjustment and desirable functions and outcomes under challenging conditions or in crises.

The main assumption of the HERO Model is that the collective experience of well-being at work is a result of the combination of three interrelated elements: healthy organizational resources and practices (e.g., job resources, healthy organizational practices), healthy employees/teams (e.g., trust, work engagement), and healthy organizational outcomes (e.g., high performance, corporate social responsibility).

The factor Self - Self-Determination - Psychological Empowerment shows a statistically significant difference between the first and second measurements. Empowerment is defined as the opportunity an individual has for autonomy, choice, responsibility, and participation in decision-making in organizations (Lightfoot, 1986).

Psychological empowerment refers to an “intrinsic task motivation reflecting a sense of self-control about one’s work and an active engagement with one’s work role (Scott, Gang & Stephen 2011). Many studies on enterprise organizations have found that psychological empowerment can effectively stimulate individuals’ enthusiasm for work and promote the improvement of job performance.

Psychological empowerment is positively related to employees’ task, contextual, and innovation performance (Yi et al., 2015). Employees’ perceptions of their leaders’ empowering behavior and psychological empowerment predict employees’ intention to

leave organizations (Janie & Marius, 2015). Empowerment is a key variable in predicting positive organizational outcomes (Seung et al., 2016).

Psychological empowerment has an important role in positive work. Statistically significant relationships were found between psychological empowerment, job insecurity, and employee engagement (Marius & Sebastian, 2010). Employees were highly engaged when they had higher psychology capital and work empowerment partially mediated the relationship between psychology capital and work engagement (Joo et al., 2016) outcomes (Irina et al., 2015).

According to the AMSO model of implementing health promotion activities, 5 % goes to Awareness, only 25 % goes to Skills, 30% to Motivation and the biggest number, 40% belongs to the Opportunity element. It means having an environment that will support healthy behavior and a safe and engaging environment for physical activity will lead to behavioral change. Providing opportunities for employees to expand their knowledge, skills, abilities, and experiences has also been suggested as a contributor to the well-being of employees (Grawitch et al., 2007; Pfeffer, 1998).

Analyzing the psychological capital questionnaire by questions, the ranks of the Wilcoxon test there was no statistically significant difference between the observed measurements observed for all variables (visible from table 35) while analysing PCQ by factors a statistically significant difference was recorded between the first and second measurements for the Self-efficacy factor (Table 41).

In addition, when analyzing ranks for factors coming from those four undertaken questionnaires except ranks for the Self-efficacy PCQ, the ranks for Amotivation WEIMS factor, Self- Determination - Psychological Empowerment factor is higher after the 2 months of the research period (Table 41) which are described in detail above, in previous chapters.

Psychological capital is a construct that alludes to a state of positive individual development shaped by four dimensions, which correspond precisely to characteristics such as self-efficacy, optimism, hope, and resilience (Luthans et al., 2007; Youssef-Morgan & Luthans, 2015).

Self-efficacy is the person's confidence and effort to face a challenging task successfully (Bandura, 1997), the personal belief of an individual to mobilize cognitive resources, motivation, and courses of action to carry out a specific action in a particular context (Youssef-Morgan & Luthans, 2015), from the organizational perspective, the way the individual performs daily, in job roles (Cavus & Gokcen, 2015).

Many studies and research have been conducted to identify a positive relationship between Psychological Capital and psychosocial and organizational variables such as leadership, confidence, creativity, and performance, among others (Clapp-Smith et al., 2009; Rego et al., 2018). The results suggest that, although being complementary concepts and act synergistically, self-efficacy, optimism, resilience, and hope are different constructs (Bagozzi & Yi, 1988; Fornell & Larcker, 1981; Sharma, 1996).

Having self-efficacy means being able to improve motivational levels which is beneficial for both, employer and employee, and ultimately the organization. Several studies have confirmed a relationship between psychological capital and better performance at work (Judge & Bono, 2021; Luthans et al., 2007a) as well as with high motivation and work engagement (Bakker & Xanthopoulou, 2013), a positive self-assessment of one's chances of success (Peterson et al., 2011), higher self-esteem (Peterson et al., 2011), happiness (Williams et al., 2015), mental health (Singh & Singh, 2018) or more effective problem-solving strategies and innovativeness at work (Luthans et al., 2011).

From the perspective of Human Resource Departments, psychological capital plays a crucial role in organizational performance. This is especially applicable for entrepreneurs as a kind of strategic human resource, since the psychological and cognitive elements of entrepreneurs could heavily determine entrepreneurial processes, decisions, and success (Baron, 2004, 2008; Baron and Ensley, 2006). For instance, Hmieleski and Baron (2008, 2009) indicated that both optimism and self-efficacy could significantly influence new venture success. Individuals with higher psychological capital are coincident about the successful completion of their allocated task (efficacy), they are emotionally driven to pursue their goals and proactively plan for alternative ways to meet their objectives (hope), they are not affected by negative outcomes or professional setbacks in their day-to-day work (resiliency) and carries a positive outlook to every situation, irrespective of its outcome (optimism). Therefore, organizational leaders should ensure to creation of a work environment that can lead to higher psychological capital within the team members.

The theory of psychological capital focuses on how an individual is changing or evolving, rather than who that individual is and that is what this study aims to present. The changes that occur when interventions are implemented strategically, are based on individual employees' needs. Luthans et al. (2007a) suggest that psychological capital, in addition to such latent variables as positive orientation (Łaguna et al., 2011) or core self-evaluations (Chirkowska-Smolak, 2012), is more responsible for human adaptive functioning than the individual factors within it.

Psychological capital influences job satisfaction and organizational commitment (Omar et al. 2016). Whereas engagement seems to be contagious and may spread across members of work teams, leaders have a special role in fostering work engagement among their followers (Arnold, Simon & Michael, 2011). Authentic leadership has been

proposed as the root element of effective leadership needed to build healthier work environments because there is special attention to the development of empowering leader–follower relationships (Carol & Heather, 2013).

Previous research has shown that academic PsyCap, on one hand, is directly related to motivation (Datu et al., 2016), engagement (Carmona-Halty et al., 2021), coping strategies (Ramírez-Pérez, 2022), self-regulated learning (Sava et al., 2020), well-being (King & Caleon, 2021; Poots & Cassidy, 2020), and performance (Carmona-Halty et al., 2019; Luthans et al., 2022); and, on the other, it is inversely related to indicators of boredom (Kang et al., 2021), stress (Lisnyj et al., 2022; Xu & Wang, 2022), procrastination (Hicks & Wu, 2015), burnout (Carmona-Halty et al., 2022b), and depression (Finch et al., 2020; King & Caleon, 2021).

The meta-analyses of Avey et al. (2011) showed that positive psychological capital promotes desirable work attitudes and behaviors (e.g., creativity, organizational citizenship behaviors, and job satisfaction) while contributing to reducing undesired work attitudes and behaviors (e.g., cynicism, intention to leave, turnover, and stress).

5.3 Discussing barriers for physical activity

The biggest obstacles they perceived in pursuing the tasks in the research were fatigue, laziness, and lack of motivation which need to be taken into account even more due to the online intervention program, but it can be seen that their expectations about the program overcome those obstacles (Table 12). Their willingness to" learn something new and prevent injuries ", „have better posture, condition, exercise habit, improve health and have fun "implicate that even though there is a possibility of not doing the given tasks, there is already something in their personalities which help them to overcome those

barriers and make that step forward and apply for the program. Future research should focus on finding the right solution and approach for those who didn't apply.

A physically active life during and after working hours is associated with improved health behaviors, productivity, work ethic, reduced sickness absence among employees, and positive financial return for employers (Dallat et al., 2013; Drake et al., 2020, Grawitch et al., 2006; Grimani, Aboagye & Kwak 2019; Pronk, 2009).

However, this research meets a low participation rate. Among 230 employees only 20 of them applied. The rest cancelled participation due to private and professional responsibilities, and 4 of them didn't fill out the final questionnaires, and as such they weren't appropriate for analysis.

After the research had been finished, a short survey was sent through the HR department to those who didn't apply to investigate the reasons of not applying for the program. The main reasons were due to time concerns (Figure 14). According to Euronews survey Lack of time is by far the main factor preventing people across the EU from participating in sports. (EU, 2022)

As can be seen from Figure 14, only 9 responses were gathered and such a small response rate could indicate that organizational culture still has not embraced such exercise programs which is consistent with other studies that have shown the success of work health promotion implementations depends not only on the structure of the policies and intervention provided but also on organizational involvement and a culture of health (Goetzel et al., 2014; Hoert et al., 2018; Taylor et al., 2018).

To successfully reach all those currently employed at the company, the whole organization needs to be involved by providing managers with the proper perspective, training, and resources concerning workplace health promotion related to physical

activity (Larsson, Åkerlind & Sandmark, 2015; Sigblad et al., 2020; Vingård et al., 2009). Managers also need to increase social support to improve employee self-efficacy, attitudes (Edmunds, Hurst & Harvey, 2013), behavioural skills, and motivation to maintain behaviours related to physical activity (Mazzola et al., 2017)

The organization in which the study was conducted functions through two allocated workplace settings, but it would be advisable for future studies to see if those who exercise could spread the motivation among other employees, to follow how company culture could change, due to health promotion activities.

On the contrary, those who did apply mentioned various reasons that contributed to their decision to apply, such as improving fitness level, improvement of health and reducing pain, learning something new and creating a habit, as visible in Table 22, Figure 8, and as could be seen from Table 23, the biggest motivation for doing it was Improvement of Health, Possibility that I will create a habit, Knowledge to be Gained, Trainer/Educator, only one answer marked „Other participants Motivate me“ while no one said anything about the rewards at the end of the program. That is consistent with other studies suggesting that incentives are good at the beginning of creating a habit, but they are not for creating long-term behavior. In addition, a participation rate lower than 10% indicates how an award-winning program at the end of physical activity intervention is not at all interesting or motivating.

In addition, according to Euro news (EU, 2022), more than half of Europeans (54 percent) say they engage in sports or physical activity to improve their health, far ahead of any other reason. Based on the findings by Ainley, Hidi & Berndorff (2002) it is recommended that future research investigate how to improve employee perceptions of Work Health Promotion Activities particularly for engaging with those least likely to volunteer for participation. Such studies may include the measurement of what motivates

employees to participate which is done within this research but due to the small sample size it is not possible to generalize.

Also, it would be useful to see which aspects of the program are most appealing to potential participants. Following this, employee feedback and preferences should be investigated and applied in the design and/or refinement of organization-specific World Health Promotion Activities and evaluated longitudinally to confirm the previous findings that positive affect and utility ratings lead to increased participation.

To investigate in more detail what are the factors that could influence the decision to start working out is something that overcomes the topic of this research, especially when such measures are offered within a workplace settings, but according to the Health Believe Model individuals are more likely to engage in health behaviors if they perceive themselves to be susceptible to a health problem, if they perceive the health problem to be severe, if they perceive the benefits of the health behavior to outweigh the costs, and if they perceive themselves to be capable of performing the health behavior.

What seems interesting, those who have applied are already active and are motivated to do more, and optimistic to feel better after the program (Table 11, Figure 5) which is consistent with positive psychology theories, such as Broaden and Built theory, Orientation to happiness, etc. By broadening and building theory positive emotions tend to broaden individuals' thought–action repertoires and scope of attention, whereas negative emotions tend to narrow them (Fredrickson 1998, 2001). It refers to State of "happiness", hedonic pursuits of activities that feel good to us physically or psychologically (Baumgardner & Crothers, 2009; Seligman et al., 2004).

These results suggest that taking time to actively express gratitude, to focus on the positive, and to engage in activities that use one's strengths can be effective strategies for

promoting happiness and well-being which explains why exercise and physical activity could be a valuable component of sustainable happiness theory.

The researchers from Chapman University during an 11-year-long study revealed that higher psychological well-being at the beginning of the study was associated with a greater level of physical activity, across more than a decade. That means the relationship between happiness and physical activity exists, not to mention the connection between being physically active and health. That puts this research of high importance due to possible behavioral changes that follow increased fitness levels, such as better nutrition/diet, decreased tobacco use, improved mental health, happiness and improved life quality.

Catalino, Algoe and Fredrickson (2014), explained “prioritization of the positive”. This concept is based on the formula of happiness by Lyubomirsky, King and Diener (2005). This formula states that happiness is made up of genetics, circumstances, and intentional activities. Based on this later element, Catalino, Algoe and Fredrickson (2014) established that people who organize their daily lives looking for positivity, that is, taking into account their potential happiness, have more positive emotions and higher levels of satisfaction with life. In their study, vigor in physical activity means high energy levels and the desire to invest effort in the activity carried out, even when difficulties appear along the way. Thus, there is an intention and motivation for a healthy activity.

Based on previous research, integration influences exercise behavior which indicates that an individual's exercise-related identity can be influential in determining their exercise behavior. This finding points to the importance of measuring integrated regulation in an exercise context and the need for practitioners to develop programs that aim to enhance exercise-related identity to increase exercise participation among individuals.

The Organization for Economic Co-operation and Development (OECD) has estimated that, on average, full-time workers in the OECD countries spend 37% of their time working on a normal day (OECD 2021). Therefore, it is very important to find the best possible solution to physical activity become workforces' daily routine.

This study intended to educate participants to be able to create functional movement exercise independently, in a safe and convenient mode and benefit from them on a cognitive, physiological and emotional level. Based on these figures it is still advisable to find appropriate solutions for increasing overall health awareness among both, individuals and organizations.

A study by Pronke & Kottke (2009) described that physical activity promotion should be an integrated initiative that measurably improves worker health and enhances business performance. Qualitative and quantitative research carried out with stakeholders from various organizations in the United States has revealed that there is perceived merit in workplace health programs because they were able to improve employee morale, reduce healthcare costs, increase productivity, reduce absenteeism, and contribute to the positive promotion of the company image (Hannon et al., 2012; Linnan et al., 2007).

Several barriers to their implementation have, however, been cited including costs, time scarcity, logistical issues, and cultural barriers (Hannon et al., 2012; Linnan et al., 2007). Previous studies have demonstrated that employees in general are positive toward workplace health promotion, but employees might prefer to keep their private life and work separate, arranging health-promoting activities by themselves (Robroek et al., 2012).

The moral atmosphere of the organization can also have negative consequences for employees if there are strong norms that define which types of bodies are recognized

as healthy, fit, or viable, and which are not (Johansson et al., 2017). This affects employee recruitment by favouring the fit and healthy, resulting in discrimination and exclusion of individuals (Flint et al., 2016).

In addition, research has shown that employees' perceptions of organizational support and involvement affect participation in workplace health promotion (Hoert et al., 2018). Some employees, according to previous studies, perceive it as an invasion of privacy which is ethically or morally troublesome. (Rothstein & Harrell, 2009).

5.3 Discussing Online Physical Activity Intervention

Benefits of using Internet-based technology to promote physical activity include the potential to reach a large number of people at a relatively low cost; the ability to provide 24-hour access to intervention materials, which increases the convenience, access, and exposure of intervention messages; and the capacity to instantaneously deliver tailored intervention messages to participants without the delays commonly found in print or telephone-delivered interventions (Marcus et al., 2000).

Online interventions are an important topic due to the technology era in which we live and the disturbances that the COVID-19 pandemic brought on working and private lives. Workplace policies and norms, full-time workloads, performance concerns, and managers' attitudes may be barriers for the employees to engage in healthy behaviors during working hours (Edmunds, Hurst & Harvey, 2013; Hunter et al., 2018; Mazzola, Moore & Alexander, 2017) and therefore this study investigate a physical activity intervention delivered online, with flexibility in choosing time for exercise.

Tasks were given at the beginning of the week and participants could choose the best possible time that suits their mood, energy level, obligations, etc. That gives them freedom at one, but also a responsibility on the other side, to get the job done.

Physical activity, according to Yeung (1996) is beneficial for improving psychological well-being and helps to provide mental distraction from workday demands. The feeling of mastery and the increase in self-efficacy when performing an activity can facilitate recovery from stress levels (Demerouti et al., 2009; Sonnentag & Jelden 2009).

Participants' experiences and opinions on online intervention programs can be seen in Table 15, which correlates with Drumford and Miller (2018) explaining flexibility of learning material delivery, more independent learning, self-pacing, and self-responsibility.

Those findings indicate that online physical activity intervention could overcome barriers related to time management, and indicate a possibility of long-term exercise behavioral change due to knowledge gained (Table 19) which is consistent with the sixth hypothesis; whereas education and knowledge play a pivotal role in empowering individuals, especially when it comes to physical activity. Besides many known benefits, it opens space for personal growth and development. According to the seventh hypothesis online intervention programs with individual and semi-individual approaches could foster greater results than on-site interventions, due to flexibility and time constraints.

A study mentioned in the literature overview by Grzywacz et al. (2007) showed that physical activity and work flexibility may contribute to positive lifestyle behaviours and may play an important role in effective workplace health promotion initiatives which supports the findings from this study.

Without a doubt, individuals who are characterized as regular exercisers are aware of the many physiological and psychological benefits that are associated with routine (i.e., regular frequency) exercise. As a result, it is not surprising that regular exercisers have aligned their values and goals with routine exercise. It also seems logical that individuals who value the benefits associated with regular exercise have incorporated that

behavior into their sense of identity (Duncan et al., 2010) which is very important when we discuss habit formation. When automaticity is developed: behaviors become ‘second nature’, ‘worming their way into your brain’ so that participants ‘felt quite strange’ if they did not do them (Lally, Wardle & Gardner, 2011). Behavior changes achievements, however small, can increase self-efficacy, which can, in turn, stimulate pursuit of further changes (Bandura, 2001).

On the contrary, some of them, based on this kind of experience, reveal that online, and self-paced is not something that they will ever choose in the future. Due to the small sample size, it is not possible to compare the motivational type differences between those who liked the program and those who didn't, but that could be an implication for further research including a bigger sample size.

This study was a combination of live introduction sessions and further online interventions. Kaur (2013) argues that blended learning, combining the online delivery of the learning materials and face-to-face live instructions and interaction between learners and instructors, is a better approach.

Even though participants' achievements and acknowledgments on a personal level can be seen in Table 19, the low participation rate, and lack of a control group, give only an indication of consistency with other findings that suggest that Internet-delivered physical activity interventions are equally as effective in promoting behavior change and Internet-based interventions have the potential to reach a greater number of people at a lower cost, they represent a cost-effective method in which to promote physical activity (Lewis et al., 2010; Marcus et al., 2000;).

There is a well-developed tradition of evaluating the implications of physical activity for the replenishment of cognitive and energetic resources during time away from work, a process known as work recovery (Meijman & Mulder, 1998). In a foundational

study on work recovery, Sonnentag (2001) suggested that leisure-time physical activity enhances off-job well-being by facilitating distraction from work-related concerns and enhancing positive physiological and psychological states, with the distraction-based pathway explained through the HRM (Meijman & Mulderm, 1998).

Moreover, findings from other research suggest that females are less physically active than males (Brand et al., 2016; Caperchione et al., 2015; Kelly et al., 2016; Magoc et al., 2016; McLaughlin et al., 2016; Viciana et al., 2016) which we cannot argue with this study due to small sample size and mostly female employees within a company, but it is something that could be considered while analyzing low participation rate.

Analyzing their expectations, after the program has finished (Table 18) about personal improvement, knowledge gained, and trainer/educator, the arithmetic mean was higher for the trainer (5,57), than for knowledge gained (4,86) and personal improvement (4,36) on the scale from 1(lower than expected) to 7(higher than expected). 92,8 % of participants would recommend this kind of exercise program (table 20) which implicates the lack and need for such programs in enterprise settings.

Since interventions were planned using the AMSO Model (Awareness, Motivation, Skills, and Opportunity) the results show how respecting that order, when planning the activities, it is possible to change behavior related to health and adopt changes in the long term.

During and even after the research period participants increased their level of physical activity due to assignments that need to be done and habit formation, which is consistent with the first hypothesis, and formulated objectives. Even after the research period has been finished, the follow-up survey shows that after two months, they have continued with at least one acknowledged activity.

It is associated with other studies related to Internet-based physical activity interventions such as one from Joseph et al (2014) which says that among all studies they analyzed (61.9%) were associated with significant increases in physical activity, which is also consistent with the findings of previous reviews (Marcus, Ciccolo & Sciamanna, 2009; Van den Berg et al., 2007; Vandelanotte et al., 2007).

Follow up survey, has only 9 of 14 responses but all of them managed to make changes in adopting healthy habits (Figure 9), 5 of them walked more than before the research started (Figure 10) and 4 of them continued to exercise learned exercise program by themselves (Figure 11). Although this research is all about small numbers, considering their influence on their relatives and those who surround them (Table 23) those findings indicate that it is possible to make a bigger change even relying on small numbers due to the impact and influence of each person individually.

What seems interesting for future research is to find a pattern between motivation before, during, and after the health promotion activities and compare how the motivational type of personality changes on an individual level and influences work motivation. A promising finding of one review was that longer-term interventions (greater than 6 months in duration) appeared to be as successful in promoting improvements in physical activity as shorter-term interventions, which differs from a previous review on this topic. (Vandelanotte et al., 2007)

When analyzing optimism to get better after the program (Table 11) and expectations about the program (Table 12) similar wishes arise, to improve health, to learn how to do that, to be motivated, and to have fun. All of them are optimistic and enthusiastic to embrace new experiences for themselves. Such pure positivism of investing their time and effort in feeling better and being healthier.

Those results indicate that is important to plan it properly and to deliver the best possible approach and program for those who are already interested. It's a big responsibility for a provider of health promotion activities, but also a big opportunity to deliver the best possible solution to keep them motivated and engaged in the long term.

Therefore, from planning to implementation of health promotion activities, advantages and disadvantages need to be taken into account when using a strategic approach. It is a challenge to find one physical activity program that fits everyone's preferences due to pain, injuries, lack of time, private responsibilities, and many other determinants of being physically active, but a smart, effective, motivational, neuroscientifically based physical activity program could be the solution for pain management, disease prevention, education and therefore a space for personal growth and development.

When talking about physical activity intervention and one program fits all, physical therapists should be an inevitable part of enterprises, especially big ones, whereas pain, and work-life balance, especially due to time constraints are the main issues for accepting and creating a new habit. If such barriers were solved on an individual level, a new motivation could arise, especially for those who didn't even apply for the program. The biggest obstacle to resolving it is to find a solution that would facilitate and support physical activity for a higher number of employees. According to data, changes could be seen on an individual level, but to measure improvement on an organizational level, the participation rate and potential strategies for consistent engagement should be the future research topic.

Humans are naturally productive and feel a need to perform, create value and improve, make use of their ability and develop." (Augustinsson, Ericsson & Pettersson, 2012; Forslin, 2003, p. 13).

The measures taken are consistent with a similar study about this topic which says that the effect may be generated with short duration sessions during the working day, with only 10–15 min of adapted exercise to be performed 3–5 days per week (Gobbo et al., 2019). It is important to point out that diverse exercise types with varying intensities can be adopted in the exercise program. Therefore, further studies are needed to determine the optimal exercise for office workers with different health conditions which is especially relevant since some participants responded that it was too demanding, especially for those who cancelled participation.

This "one-size-fits-all" approach often fails to attract considerable employee participation and engagement, especially among the individuals who would benefit most from the program but are least likely to volunteer, particularly when grouped with colleagues who are already engaging in healthy lifestyle behaviors. In turn, such a practitioner-driven program design approach can result in low participation and/or high rates of attrition (Anderson et al., 2009; Mache et al., 2015; Middlestadt et al., 2011)

In the research investigating participation and engagement (Crutzen et al., 2011; 2014) developed an evaluation strategy to measure user perceptions of health promotion interventions based on the Technology Acceptance Model (Davis, 1989). In addition to overall impressions of the program, the authors derived two key constructs of program user perceptions. The constructs were characterized as 'affective user perceptions' and 'cognitive user perceptions of utility'. More specifically, Crutzen et al. (2014) posited that sustained participant engagement in a health promotion program can be achieved through positive affect (i.e., emotional responses related to: enjoyment; interest; and

support) and high perceptions of program utility (i.e., cognitive evaluations related to: ease of use; outcomes; and program value).

In the design and evaluation of Work Health Promotion Activities, participant perceptions of affect and utility predict an individual's participation and engagement (Crutzen et al., 2011). A positive effect is likely to increase interest in the program and result in increased time participation (Ainley, Hidi, & Berndorff 2002), whilst positive perceptions of utility (i.e., user experience) lead to increased participant loyalty and dedication to the program (Crutzen et al., 2009).

Scientific reviews have shown that the design of successful Work Health Promotion activities s is a complex process and programs are most effective when they are based on scientifically valid constructs (Brug et al., 2005; Crutzen et al., 2011; Harden et al., 1999; Kristén et al., 2015; Michie et al., 2009; Webb et al., 2010), tailored to the meet the needs of individuals (Anderson et al., 2009; Crutzen, 2011; Fjeldsoe et al., 2009; Michie et al., 2009; Noar et al., 2007; Radcliff et al., 2012; Rodrigues et al., 2016) and perceived as both useful and enjoyable by participants (Attfield et al., 201; Crutzen et al., 2014; Goetzel et al., 2007; Kilpatrick et al., 2016; McCleary et al., 2017; Nöhammer, Schusterschitz & Stummer, 2013).

Such programs can improve the overall health of the individual (Hutchinson &Wilson 2012; Nöhammer, Schusterschitz, & Stummer, 2013; O'Donnell, Bishopn & Kaplan, 1997; Rodrigues et al., 2016;), increase physical activity (Conn et al., 2009; Kilpatrick et al., 2016), lead to small improvements in healthy weight status (Anderson et al., 2009; Rodrigues et al., 2016), have positive effects on dietary behaviors (Mhurchu, Aston & Jebb, 2010; Pescud et al., 2016) and improve employee productivity (Goetzel et al., 2008; Hymel et al., 2011; Lenneman et al., 2011).

Whilst there is overall support for the effectiveness of Work Health Promotion Activites, the reported extent to which such programs achieve lasting changes in behaviour varies (Anderson et al., 2009, Noar et al., 2008; Rongen et al., 2013). This variation in reported effectiveness is expected given the diversity in the design and quality of programs offered.

The main strength of this study was evaluating the impact of an online workplace exercise intervention on long-term habit formation and changes in motivational levels due to the power of movement. Besides self-reported measures in all mentioned questions this study have one more self-reported measurement, but it could be seen as an objective form since the fitness level have been measured. Based on 4 exercises, measured by repetition in two minutes and the last one was crawling with knees above the floor, following a contralateral pattern for as many minutes as they can.

It can be seen in Table 51, Table 52 and Table 53 that statistically significant difference was recorded between the first and second measurements for the observed questions/functional movement tests.

Decrease pain and sedentary behavior, increase knowledge and self-care awareness outside working hours with objective and self-reported measures are indications that functional, neuroscientifically movement helps to motivate, and choose healthy behavior more easily. Pre-test and post-test difference in the observed indicators for the all factors could be seen in Figure 13 and Figure 14.

Coaching, (Fortier et al., 2012), goal-setting (Hagger et al., 2016), feedback (Harkin et al., 2016), and technology-based interventions (Finkelstein et al., 2016) have all been shown to be effective in promoting physical activity in the workplace. However, more research is needed to determine the most effective intervention strategies for different employee populations and workplace settings.

To make physical activity part of everyone's daily life it is important to understand common barriers to physical activity and to create strategies to overcome them.

5.5 Discussing health sustainability within workplace settings

Choosing an effective Work Health Promotion Activities contributes to actual vitality and work engagement and has the potential to prolong working life (Nielsen & Midtsundstad, 2021).

Based on this study's findings it is important to create measures that are both, salutogenic and pathogenic. Pathogenesis analyses how risk factors of individuals and their environment led to illness. Correspondingly, salutogenesis examines how resources in human life support development towards positive health. Positive health includes objective fitness, subjective well-being, optimal functioning, meaningful life, and positive quality of life (Raphael et al., 1996 p. 370).

The European Health Promotion Indicator Development model (Bauer et al. 2006) states a parallel structure between the prevention of risk factors (pathogenesis) and the promotion of resources (salutogenesis) for health development. The split structure has an impact on the planning, implementation, and effects of health promotion (Bauer et al. 2006).

Another reason for implementing sustainable measures is the duration of working life. According to the OECD data on retirement age, the most OECD countries have increased since 2000 ("Report on the Implementation of the OECD Recommendation on Ageing and Employment Policies", 2022) due to specific work patterns and demographic changes and therefore healthy and sustainable working life has become increasingly

important, also due to the global challenge of a rapidly aging population. The aging population is identified as one of the greatest global challenges that will affect society during the next four decades (Basu & Kiernan, 2016).

Pain is something that affects willingness and motivation for exercise and with individual approach and adequate measures pain could and must be reduced to the level that ensures safe and functional movement. Considering the future of the health system, especially related to sustainability within the healthcare system, this experimental study emphasize prevention over treatment.

Every bigger corporation should have a small "health squad" within the company because it would prevent so many unnecessary costs, increase sustainability, and increase health and physical activity awareness. Educated and individually compound measures lead to the best results. It is important to ensure that every individual can move freely and with such measures create equal opportunity for being active. Health is a human dignity. It goes hand in hand with the 3rd UN sustainable goal to *Ensure healthy lives and promote well-being for all at all ages*. When talking about sustainability this research also argues about sustainable goal no.8, *to promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all*, and no.11 *make cities and human settlements inclusive, safe, resilient, and sustainable.*

17 Sustainable Development Goals (SDGs) are an urgent call for action by all countries - developed and developing - in a global partnership to end poverty and other deprivations. Conducting strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests. (United Nations, 2015).

Modern society's diseases are caused primarily by unhealthy behavior, and are therefore preventable, triggered multiple behavioral interventions in the areas of physical activity and nutrition (Ahrens & Schott, 2004) are needed. Therefore, making working life sustainable for people until older ages is a key issue in societies, governments, enterprises, and organizations eager to force both humanity and economic advance.

Even though there is still a need for research focusing on how improving performance at the individual level can enable improvement in organizational performance, this study demonstrates how the power of movement, and smart exercise intervention programs increase the level of intrinsic motivation that could transfer in every area of private and professional life.

Strategic work health promotion plan should be based on an individual, organizational, and environmental levels. It should have a system for health risk assessment, a program that will Increase self-health care awareness (based on the AMSO model), improve fitness activity level, reduce bad habits such as smoking, bad eating habits, health Education/nutrition, sleep, mental health, promotion of social aspects of health, increased sustainability, and offer ergonomically safe solutions.

According to WHO (2010a), the workplace is a priority setting for health promotion, and therefore such projects need to be supported, not just an effort of individuals who want to invest in their workforce or companies that are offering so. According to WHO total worker health, there are four domains, the physical environment, the psychosocial environment, personal health resources, and enterprise community involvement.

Globalized markets, along with increasingly unstable economic environments and changes, impose on companies the need to adopt strategies that, in addition to giving

them a competitive advantage over other organizations, promote their sustainability (Khediri, 2021).

5.6 Implications and Recommendations for future research

Work health promotion is defined as the combined efforts of employers, employees, and society to improve the health and well-being of people at work (European Network for Workplace Health). According to Sauter, Lim and Murphy (1996), a healthy workplace maximizes the integration of worker goals for wellbeing and company objectives for profitability and productivity.

A collision between personality and work can lead to certain behaviors that promote work motivation (Naquin & Holton, 2002). Given today's economy, a motivated workforce represents both a competitive advantage and a critical strategic asset in any work environment. Two integral components of a healthy workplace are the health of employees and the performance of the workplace (Jaffe, 1995).

Productivity was the most frequently mentioned outcome of the importance of having healthy workers. Greater productivity was believed to translate into higher business profitability.

Even it has such small figures this study has demonstrated various improvements on an individual level that are related to job performance, work motivation, empowerment, and psychological capital. When conducted on a bigger sample size this study could demonstrate various reasons that go in favor of implementing workplace health promotion activities and measure its effects on an organizational level. Such investment could be beneficial for both, employees and employers, for the success of the company, and health sustainability in general.

When creating a work health promotion activity, it is important to build a culture of health within a company. Without the support of an employer, mutual trust, and respect among employees it is harder to reach a higher number of participants. If supported by leaders and managers health promotion could become an inevitable part of an enterprise to educate, motivate, and facilitate physical activity among employees.

Using new technology, interventions could be delivered, monitored, and used more easily with additional features of follow-up, feedback, and motivational strategies individually created to create a high level of health literacy and health awareness. Preventive measures increase sustainability not just for an individual, but for the environment and organization, as well.

This study was conducted in a private organization, with two separate locations which makes it harder to measure the influence of employees to each other. Also, the enterprise consists of sedentary and stationary occupations which put further questions on job positions that are physically demanding. For such workplaces, occupational health professionals including physical therapists are even more needed, whereas it could be seen from this study a pain interference on motivation and optimism. It is an inevitable part of creating a sustainable workforce. According to knowledge in the areas of ergonomics and biomechanics, physical therapists can intervene as part of a multidisciplinary team to improve well-being and prevent and treat musculoskeletal injuries among workers (Arruda, 2019).

According to the literature physical therapy is considered an effective and economical tool that can be important to reduce the prevalence of work-related musculoskeletal injuries and increase worker productivity, through the implementation of specific physical exercise programs (Kelly et al., 2018; Prall & Ross, 2019; Suni et al.,

2017). As such, the role of the physiotherapist becomes essential, improving workers' quality of life and preventing and/or treating musculoskeletal injuries (Arruda, 2019).

In the performance of this study, some limitations were found, such as the small sample size and the fact that the gender was mostly female. Furthermore, the sample was formed of volunteers, which produced a selection bias. The small sample size is not just an issue for generalization applicability yet its limitation of correlates and regression analysis to examine the relationship between physical activity and productivity, as well as the mediating effect of empowerment.

The most positive assumption of this research is that motivation is related not just to an activity but to the type of personality and that it could be changed due to right management and support.

Future research should investigate how personal characteristics may lead to different motivational orientations. Sheldon and Elliot (1998) pointed out that because self-determined goals originate from personal values, and because they are viewed as the mechanism by which values transfer into action (Latham & Pinder 2005), they arguably have an advantage over those that are externally forced (Deci & Ryan 1991).

Considering the geolocation of this research it is important to correlate with health literacy in Croatia, a multidimensional concept conventionally defined as the degree to which individuals can attain, understand, and use health information as a basis for making correct health decisions and following treatment-related advice (Paasche-Orlow & Wolf, 2007)

Low levels of health literacy are frequently associated with limited risk factor understanding, poor self-management in chronic diseases (Cajieta et al.,2016; Gazmararian et al., 2003; Reading et al., 2017) and lower adherence to prescribed treatment (Miller, 2016).

According to Bobinac (2023) previous research showed that lower health literacy is associated with detrimental health outcomes (Paasche-Orlow & Wolf, 2007; White, Chen, & Atchison, 2008), and given that 53% of the Croatian population has limited or problematic health mortality rates in prevalent illnesses such as cancer and cardiovascular diseases in Croatia are highest or among the highest in the EU (Eurostat, 2019, Dyba et al., 2021).

Those findings should be used as a useful parameter when talking about prevention, especially education regarding the advantages of physical activity versus sedentary. According to results, education, and especially learning through experience could influence health self-care awareness and literacy not just to promote physical activity, but to adopt as many healthy behaviours as needed to prevent such high numbers of non-communicable diseases. Prevention of chronic diseases is an important global health issue (Geneau et al., 2010; Strong et al., 2005) and it's not just assigned to the country of Croatia. This study enhances the idea that health professionals must promote, educate, and implement ideas of health prevention and health sustainability whenever possible and the workplace is one such place due to various stakeholders benefit from it.

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