

Impact of the “se mexe tx ® cal exercise program on the quality of life of transplants

Abstract

Organ transplantation represents survival for patients who suffer from limitations. Generally, every transplant patient aims to resume his activities after going through a period of physical and psychological suffering, and physical exercise has proven to be a strong ally in this resumption. Several benefits are observed with the practice of physical activity: prevention of osteoporosis, prevention of diabetes and hypertension, the gain of muscle mass, improvement in the quality of sleep and mood, and minimization of side effects of immunosuppressants. Although there is no consensus regarding exercise protocols for recipient transplants, the benefits provided by their practice are observed so that the exercises should be stimulated after the medical team releases and are accompanied by a physical education professional. In recent decades, there has been an unprecedented transformation in the standard of living of human societies. Mechanization, technological advances, and factors added to the fear that the transplanted person has to exercise, makes a sedentary lifestyle a complicating item in maintaining the health and quality of life of the transplanted.

Objective: The study aims to determine the impact of the “se move tx” exercise program on the quality of life of transplant recipients.

Method: For that, the method used was the application of a questionnaire (google docs) addressing issues in this area. The questionnaire consists of four sections: questions of personal presentation, aspects that improved after joining the program with scores from 0 to 5, questions to define items such as exercise, transplantation, disposition, care, balance, quality of life, and finally, leaving a comment if you wanted. The questionnaire was sent to the virtual communication group so that it could be answered.

Results: The results were obtained through the analysis of the collected data demonstrated by the google docs platform itself through graphs showing the percentages reached in the answers related to the questions addressed, allowing visualization of the different scores attributed to each question.

Conclusion: it was concluded that the referred exercise program had positive impacts on several aspects of quality of life, such as strength gain, self-esteem, improvements in medical exam parameters, etc.

Keywords: transplant, exercise, quality of life

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Introduction

The physical education professional and lung transplant recipient Liège Gautério CREF 017513-G/RS noticed that, after discharge from pulmonary rehabilitation, most patients did not continue physical exercise, and many had gained weight, compromising the transplanted organ due to the emergence of rejection.

Knowing that physical exercises are strong allies against weight gain and alleviate many side effects of immunosuppressants, he created the project “Se move TX” with the aim of encouraging transplant recipients to exercise and maintain their health, thus providing a better quality of life.

The program consists of a series of videos made available on the YouTube platform, involving exercises that are easy to perform, using accessories such as water bottles, a ball, and a broom handle. Aspects such as strength, aerobic conditioning, flexibility, coordination, balance, etc. are worked on.

The purpose of this program is to make the transplant patient insert the exercises into their routine, so that, over time, they can choose

other types of physical activity, in addition to the exercises on the aforementioned platform.

After the launch of the YouTube channel, a virtual communication group was created so that doubts could be clarified and so that there was greater interaction on the part of the participants, motivating each other to take walks, runs, and other practices.

Parallel to this group, another was formed, with nutritional guidance, by the nutritionist and kidney transplant Camila Romaquelo (CRN3 27349) for transplant patients, providing integrated work with food management.

You Tube Channel:

https://www.youtube.com/channel/UcsGGmbyQp5PerrkJiGM_r3w?view_as=subscriber

Goal

The present work aims to analyze the relationship between physical exercises of the “Se move Tx” program and quality of life in transplanted patients in 4 months of adherence (between April and August 2020).

Material and methods

For the development of the research, a self-administered questionnaire was elaborated by Liège Gautério, in collaboration with the psychologist Inês Costa (CRP07/26827) with the objective of evaluating the quality of life of the transplanted patients inserted in the mentioned project.

The questionnaire (divided into 4 sections) was sent to the virtual communication group through a link:

https://docs.google.com/forms/d/1DvzK0qT7_n2yRVzZULO6mHOLQwAT-Z8OC2kkUJe7pCo/edit?ts=5f53cd97

Section 1 consisted of the following questions: age, sex, type of transplant, time since transplantation, whether they practiced exercises before transplantation, whether they practiced exercises after transplantation, and how often.

Participated in this study, 27 transplanted members of the project “Se Mexe TX”, 63% male and 37% female.

37% liver transplants, 25.9% kidney transplants, 14.8% lung transplants, 11.1% heart transplants, and 11.1% liver and kidney transplants.

63% already practiced some physical activity before the transplant and 37% did not practice exercises before the transplant.

100% exercise after the transplant.

37% three times a week, 22, 2% four times a week, 22.2% daily, and 11.1% twice a week.

Section 2 presents 11 items that should receive a score from 0 to 5, according to their level of improvement, after joining the project, where 0 means no improvement and 5 means great improvement.

These aspects were: mood, sleep, self-esteem, mood, weight, strength, respiratory conditioning, medical exams, body aches, food, and psychological aspects.

Section 3 consisted of six questions in which the participant should define the following aspects: physical exercise, quality of life, disposition, transplantation, care, and balance. Section 4 was free for the participants to leave a comment if they wanted to.

Results

Section 1

27 transplanted members of the project “Se Mexe TX” participated in this study, 63% male and 37% female (Figure 1).

37% liver transplants, 25.9% kidney transplants, 14.8% lung transplants, 11.1% heart transplants, and 11.1% liver and kidney transplants (Figure 2).

63% already practiced some physical activity before the transplant and 37% did not practice exercises before the transplant (Figure 3).

100% exercise after the transplant. 37% three times a week, 22.2% four times a week, 22.2% daily, and 11.1% twice a week (Figure 4).

Section 2

In the Disposition item, the results were as follows: 48.1% marked score 5 (great improvement in this aspect) followed by 40.7% in score 4, 7.4% in score 3, and 3.7% in score 2.



Figure 1 27 transplanted members of the project “Se Mexe TX” participated in this study, 63% male and 37% female.

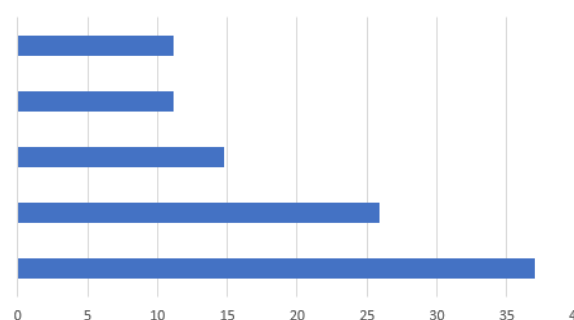


Figure 2 37% liver transplants, 25.9% kidney transplants, 14.8% lung transplants, 11.1% heart transplants, and 11.1% liver and kidney transplants.

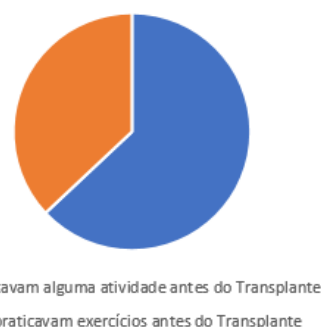


Figure 3 63% already practiced some physical activity before the transplant and 37% did not practice exercises before the transplant.

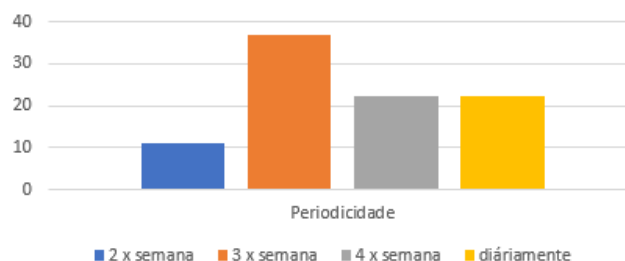


Figure 4 100% exercise after the transplant. 37% three times a week, 22.2% four times a week, 22.2% daily, and 11.1% twice a week.

In the Sleep item, the results were as follows: 44.4% marked score 5, 25.9% score 4, 25.9% score 3, and 3.7% score 0.

In the item Self-esteem, the results were: 44.4% in score 5, 40.7% in score 4, 11.1% in score 3, and 3.7% in score 0. The item Humor had

the following results: 51.9% scored 5, 33.3% scored 4, 11.1% score 3, and 3.7% score 0.

The Weight item presented the results: 14.8% scored 5, 29.6% scored 4, 33.3% scored 3, 7.4% scored 2, 7.4% score 1, and 7.4% score 0.

Item Strength presented 22.2% of the answers score 5, 44.4% scored 4, 25.9% scored 3, and 7.4% scored 2. In the item Conditioning/Breath, the results were 22.2% score 5, 44.4% score 4, 25.95% score 3, and 7.4% score 1. Improvement in medical exams: 59.3% scored 5, 18.5% score 4, 18.5% score 3, and 3.7% score 0. Improvement of body pain: 22.2% score 5, 29.6% score 4, 29.6% score 3, 11.1% score 2, and 7.4% score 0. Item food obtained the results: 40.7% scored 5, 40.7% scored 4, 14.8% scored 3, and 3.7% scored 2.

Psychological aspects: 40.7% scored 5, 48.1% scored 4, 3.7% scored 3, 3.7% scored 2, and 3.7% scored 0 (Figure 5).

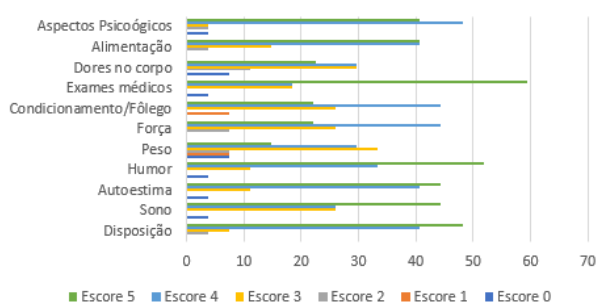


Figure 5 Psychological aspects: 40.7% scored 5, 48.1% scored 4, 3.7% scored 3, 3.7% scored 2, and 3.7% scored 0.

Section 3 (Tables 1–6)

Table 1 Is physical exercise for me?

Response	Number of people
Self-care	1
Well-being	1
Disposition	1
Essential	3
Fundamental	2
Necessary	3
Mandatory	2
Remedy	1
Health	5
Survival	2
Life	6

Table 2 Quality of life for me is it?

Response	Number of people
Autonomy	4
Well-being	3
Hope	1
Essential	3
Happiness	1
Harmony	1
Immeasurable	1
Primordial	2
Health	4
All	2
Life	2

Table 3 Will it be for me?

Response	Number of people
To wake up	3
Animo	1
Well-being	2
Energy	3
Essential	1
Strength	3
Freedom	1
Very important	2
Primordial	3
Respect my limits	1
Health	1
Stay active	1
All	5
Will to live	1

Table 4 Transplant for me?

Response	Number of people
Love	1
Blessing	1
Renewed hope	2
Mere treatment	1
New chance	3
Gift	2
Rebirth	6
Resilience	1
Life	14

Table 5 Care for me is it?

Response	Number of people
Love	2
Love the next	1
Self love	3
Attention	1
Delicacy	1
Discipline	2
Essential	5
Do everything right	1
Very important	2
Obligation	2
Primordial	1
Respect for life	2
Health	2
Follow the treatment	1
To live	1

Table 6 Balance for me is it?

Response	Number of people
Common sense	1
Seeking out	1
Essential	1
Be at peace	5
Firmness	1

Table 6 Continued...

Response	Number of people
Focus	1
Strength	2
Fundamental	2
Gratitude	2
Incomparable	2
Threshold between lack and exaggeration	1
Measure the consequences	1
Necessary	2
Goal	1
Organization	1
Healthy	3
Tuning	1
Life	2

Discussion

Sport and physical activity arrived in the 19th century following the political and social transformations that began in previous centuries, demonstrating, since then, a tendency to serve as a projection screen of social dynamics. A physical exercise is a form of leisure and of restoring health from the harmful effects that the stressful routine of work and study brings.

Exercise, after overcoming the initial period, is usually a pleasant activity that brings numerous benefits to the practitioner, ranging from improving the lipid profile to improving self-esteem. Quality of life in health places its centrality on the ability to live without illness or to overcome the difficulties of states or conditions of morbidity.¹

There are physical and psychological factors involved in people's quality of life when they are at work and which, depending on their competent management, will provide favorable conditions that are essential for better performance and productivity.²

Physical inactivity and a sedentary lifestyle are linked to risk factors for the development or worsening of certain medical conditions, such as coronary heart disease or other cardiovascular and metabolic changes.³

Studies carried out in the United States claim that the systematic practice of physical exercise is associated with the absence or a few depressive or anxiety symptoms.

In recent decades, physical inactivity has contributed to the increase in sedentary lifestyles and its associated harm to the health and well-being of the individual.

All of this is a consequence of a new standard of living in modern society. These changes in habits resulted in an environment conducive to physical inactivity and, together with excessive and erroneous eating, to an incorrect lifestyle. In this case, the practice of regular physical activity and its health benefits is seen as an important ally against unwanted consequences for health.

In this sense, several studies on the subject are carried out, in the search to know and inform modern society about the evil of physical inactivity.⁴

Understanding the relationship between physical exercise and psychobiological aspects has been the central theme of some studies and reviews. It was from the 1970s onwards that the first works described in the literature began, using aerobic exercise and its repercussions on mood and anxiety as a model.

Although the results demonstrate the importance of the benefits of physical exercise for cognitive functions, mood disorders, and sleep, there is still a lack of research studies, since the influence of factors such as intensity, duration, and type of exercise, or yet, the combination of aerobic and strength exercise, flexibility, and speed on the psychobiological aspects, need to be evaluated.

In addition, most of the studies carried out previously used heterogeneous groups, with scarce resources and equipment, making us question the methodological procedures used and available at the time of carrying out these studies.

In view of this, new research has been developed in an attempt to relate the psychobiological aspects with physical exercise, which may, in this way, lead to an improvement in the quality of life and provide greater clarification on the influence of physical exercise on human behavior.⁵

Sleep and physical exercise

About 30% of the adult population in the US and 20 to 40% of the world population are affected by sleep-related problems, worsening quality of life, increasing the risk of accidents, and decreasing productivity at work, among other consequences.

Although the effectiveness of physical exercise on sleep has been demonstrated and accepted by the American Sleep Disorders Association, as a non-pharmacological intervention to improve sleep, few health professionals have recommended and prescribed physical exercise for this purpose.⁶

A recent epidemiological survey carried out in the city of São Paulo showed that between 27.1 and 28.9% of physically active people and 72.9 and 71.1% of sedentary people complained of insomnia and excessive sleepiness, respectively.⁷

But why can physical exercise improve sleep patterns? Some studies have attempted to answer this question, based initially on three hypotheses:

The first hypothesis, known as thermoregulatory, states that the increase in body temperature, as a result of physical exercise, would facilitate the onset of sleep, thanks to the activation of heat dissipation and sleep induction mechanisms, processes controlled by the hypothalamus.⁸

The second hypothesis, known as energy conservation, describes that the increase in energy expenditure promoted by exercise during wakefulness would increase the need for sleep in order to achieve a positive energy balance, restoring an adequate condition for a new wakefulness cycle.

The third hypothesis, restorative or compensatory, in the same way as the previous one, reports that high catabolic activity, during wakefulness, reduces energy reserves, increasing the need for sleep, and favoring anabolic activity.⁹

As for the variables related to physical exercise, intensity, and volume are extremely important, because when the overload is increased to an ideal level, there is a better response in the quality of sleep. On the other hand, when the overload imposed by exercise is too high, there is a direct negative influence on sleep quality. Active people sleep better than inactive people, with the hypothesis that improved sleep provides less fatigue during the next day and more willingness to practice physical activity.

Thus, it appears that physical exercise and good quality sleep are essential for a good quality of life and for the physical and mental recovery of human beings.

Mood disorders and physical exercise

Studies carried out in the USA claim that the systematic practice of physical exercise for the general population is associated with the absence or a few depressive or anxiety symptoms. Even in individuals clinically diagnosed as depressive, physical exercise has been shown to be effective in reducing the symptoms associated with depression.¹⁰

It is important to determine how the reduction in mood disorders occurs after exercise (acute or after a training program), so it will be possible to explain its effects, as well as other aspects related to the practice of this activity. Understanding the appropriate intensity and duration of exercise, so that the effects on anxious and depressive symptoms can be observed, is the key to unraveling how physical exercise can act to reduce these symptoms, because although there is consensus that this practice reduces mood disorders, there is no consensus on how this occurs. The first step in understanding this relationship is to understand the etiology of the disorders. Genetic factors may be implicated in the occurrence, but the genesis of the disorders is also implicated in the biological, behavioral, and environmental function.

With regard to anxiety, numerous theories have been proposed to explain its genesis: cognitive behavioral, psychodynamic, sociogenetic, and neurobiological theories. The only thing that can be said is that the effect of physical exercise on anxiety is multifactorial.

O'Connor et al mention that in a series of experiments, anxiety states were determined by scores on the State-Trait Anxiety Inventory (STAI) before and after vigorous exercise. When 15 adult men ran for 15 minutes, anxiety decreased below baseline immediately after the run and remained decreased for 20 minutes. Six men with neurotic and six with normal anxiety were tested, before and during the full test, on a treadmill to exhaustion, and the results showed a reduction in anxiety scores.¹¹

Studies, such as the one by O'Connor et al, demonstrated that anxiety responses to maximum exercise depend on the level of anxiety that the individual had before starting an exercise program, as well as the recovery time after this exercise, since in the first five minutes after the exercise, the level of anxiety is high and only then decreases when 10-15 minutes have passed since the exercise was performed.¹¹

The intensity at which physical exercise should be performed was addressed in a study where fifteen adults of both sexes performed 20 minutes in sessions on an ergometric bicycle, on separate days, with intensities that varied between 40, 60, and 70% of their O₂ peak. Anxiety status was measured using a scale before and after each exercise session. The results showed that, at intensities close to 40 and 60% of the O₂ peak, anxiety levels were reduced after performing the exercises, and when the exercise was performed at 70% of its O₂ peak there was an increase in the anxiety state index and only a few hours after the end of the exercise did the level return to its initial state or even below.

The effectiveness of physical exercise associated with depressive symptoms has also been reported in relation to depressive states caused by other illnesses. Coyle and Santiago carried out a study in which the main objective was to evaluate the effect of exercise on the aptitude and psychological health of disabled individuals. The volunteers underwent aerobic exercise for 12 weeks. The results showed that aerobic exercise improves fitness and decreases depressive symptoms in this sample. This reduction may be the result of physiological and/or behavioral mechanisms associated with aerobic exercise.¹⁴

A study conducted by Lopes observed the effects of eight weeks of aerobic exercise on serotonin levels and depression in women between

50 and 72 years old. The Beck Depression Inventory was applied in this study and laboratory analyzes were performed to measure serotonin levels. The results indicated that there was a reduction in the percentage of fat and in the plasma levels of serotonin, suggesting that this relationship between physical exercise and fat mobilization improves the participants' mood states.¹⁵

The benefits of the practice of physical exercise reflect the increase in the levels of quality of life of populations that suffer from mood disorders. However, both aerobic and anaerobic exercise should privilege the relation in the temporal increase of the execution of the physical exercise and not in the increase of the workload (volume x intensity relation).

Quality of life

Despite being a difficult concept to explain, most people intuitively perceive what quality of life is. That is, although the meaning of quality of life is sometimes not obvious to some people, its notion is clear. Most people associate the quality of life with "feeling good". In fact, this notion of quality of life is in line with the main factors that influence it, such as health, work, and the environment...

The concept of quality of life is very comprehensive, encompassing not only physical health but also psychological state, level of independence, social relationships at home, school, and work, and even your relationship with the environment. The concept of quality of life is directly associated with self-esteem and personal well-being and comprises several aspects, namely, functional capacity, socioeconomic level, emotional state, social interaction, intellectual activity, self-care, family support, health status, cultural, ethical, and religious values, lifestyle, job satisfaction and/or daily activities and the environment in which they live.

For the WHO, the definition of quality of life is "the perception that an individual has about their position in life, within the context of the cultural and value systems in which they are inserted and in relation to their goals, expectations, standards and concerns". This is a definition that includes the influence of physical and psychological health, level of independence, social relationships, personal beliefs, and their relationships with inherent characteristics of the respective environment in the subjective assessment of the individual quality of life. In this sense, we can say that quality of life is defined as the "individual's satisfaction with regard to their daily life".¹²

We must not confuse the quality of life with the standard of living. Many people have a wrong notion of quality of life, confusing the terms. The standard of living is a measure that calculates the quality and quantity of goods and services available.

Quality of life and health

Quality of life and health are inseparable terms. Quality of life is associated with health in such a way that many authors do not distinguish between them. For them, health and quality of life are the same thing. In fact, health is not the only factor that influences our quality of life, however, it is of great importance.

Generally, health and quality of life are two closely related topics, since health contributes to improving the quality of life of individuals and this is fundamental for an individual or community to be healthy. However, it does not only mean physical and mental health, but that these people are at peace not only with themselves, but also with life, with the people around them, in short, having a quality of life is being in harmony with several factors.

With regard to health, quality of life is often considered in terms of how it can be negatively affected, i.e, the occurrence of a debilitating

illness that is not life-threatening, an illness that is life-threatening. of life, the natural decline of an elderly person’s health, mental decline, chronic disease processes, etc. All these situations are neutering our quality of life.

In this sense, a healthy life has a profound impact on people’s quality of life.

Quality of life and physical health

Physical health obviously affects our quality of life. For example, there is a relationship between physical activity, improved health, and quality of life. Likewise, there is a relationship between proper nutrition and quality of life. Quality of life and healthy eating are concepts that are closely related. Having a healthy and balanced diet is essential for the well-being of the individual. When the body receives the ideal amounts of nutrients and vitamins it needs, your physical health improves and, consequently, increases your quality of life.

In summary, if we manage to improve our physical health condition towards a healthier life, through correct health promotion, then we will be able to improve our quality of life.

Quality of life and mental health

The concept of quality of life has gained increasing importance in the field of mental health and health care, increasing its importance in medical discourse and practice.

It is no coincidence that the definition given by the WHO for health is broad. She defines it as “the state of complete physical and mental well-being”. Often, some people, when thinking about health and quality of life, leave mental health aside.

However, mental health is of enormous importance today. We are witnessing an increase in cases of chronic stress and burnout, anxiety, and depression, in addition to many other psychological and emotional problems.

A person with poor mental health, depression, for example, has great difficulty maintaining loving relationships, performing functions at work, and even educating children. A person with emotional problems can influence all family members. A person with affected mental health is more prone to drug and alcohol addiction, contracting infectious diseases, developing allergies, autoimmune diseases, etc. There are, however, many other harmful consequences when we neglect mental and emotional health and well-being.

Taking care of mental health is much simpler than it seems, just maintain good relationships with the people around us, have a satisfying love life, don’t dwell on past problems, don’t be too demanding with yourself, forgive yourself and others, laugh whenever you can, cry when you need to and love. If you experience difficulties in doing this, it is better to seek help from a professional.

Being in good mental health is being in balance with your inner world and with the world that surrounds you, it is being at peace with yourself and with others.¹³

This study is justified by the proposed purpose of maintaining the health of the transplanted patient, through the frequent practice of physical exercises, which allow, among other benefits, weight loss, muscle mass gain, prevention of osteoporosis, diabetes, hypertension, etc. that it remains stable and has fewer complications. This represents savings in hospital admissions and medications and the maintenance of a physical and mental quality of life for the patient, who becomes productive again and returns to his working life.

Conclusion

After evaluating the results of this research, it was possible to conclude that the “Se Mexe TX” project provided a significant improvement in most of the issues raised, reflecting in a better quality of life for transplant recipients and making them feel encouraged to return to their activities of daily living, work, and leisure, being productive citizens and contributors to society. Patients who exercise maintain their health and readmission less, meaning savings for hospitals and for themselves, as they do not need medication to treat possible pathologies that can be prevented by exercising, such as diabetes, osteoporosis, and insomnia, among others.

For these reasons, it is necessary to understand the benefits of physical exercises for this public and to refer them to a program of guided physical activities by the team that accompanies them.

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Conflicts of interest

Authors declare that there is no conflict of interest exists.

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