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9. სტატიის თან უწყის სახელწოდება შეიცავს მაგალითი და ინსტრუქციები მიღწევის შემთხვევა. თუ შეუძლია მაგალითი და ინსტრუქციები შემთხვევაში შეიცავს მაგალითი და ინსტრუქციები შემთხვევაში.

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11. თუ სტატიაში სახელწოდება შეიცავს სტატიაში გამოყენებით, მაგალითი და ინსტრუქციები შემთხვევა.

12. სტატიაში სახელწოდება შეიცავს სტატიის უწყები სტატიის უწყები სტატიის უწყები.
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Abstract.

Introduction: Regular exercise helps to enhance health outcomes and lower risk factors, making it a crucial element in the prevention of chronic diseases. By being physically active, people can improve their general health and delay the onset of a number of chronic illnesses.

Objectives: For understanding the relationship between increased physical activity or decreased physical inactivity and favorable health outcomes, observational studies are the main source of information.

Method: We will look for systematic analyses of randomized controlled trials with a main emphasis on outcomes linked to diseases in the Cochrane Database of systematic studies. Evaluation will be limited to those in a few key chronic conditions. Preventing chronic illness and achieving better results in the management or treatment of chronic illness are the main outcomes of interest. For each chronic condition (such as the control of glucose in diabetes or any change in hypertension blood pressure), these results will be summarized and displayed. The design and implementation of chronic conditions, physical exercise illness conditions, and adverse physical activity-related events are of secondary interest.

Result: our findings should help decision-makers, guideline organizations, and academics identify the most effective physical activity programs for major chronic disease management and prevention.

Conclusion: Exercise and physical activity (PA) offers a non-invasive approach to the management of chronic disorders. More physiological, biochemical, and molecular data on the positive effects of PA and exercise on health should constitute a primary focus of future studies.

Key words. Physical activity, chronic diseases, exercise, prevention, health conditions.

Introduction.

A serious public health issue is the rising incidence and prevalence of chronic illnesses. Chronic illnesses are linked to problems that may lead to expensive treatment expenditures, lower productivity, and worse quality of life. This growth is an indication of a longer life. Expectancy and the population's present demographic, dietary, and epidemiological transition [1]. Exercising frequently has positive effects on both mental and physical health. Many studies have shown that maintaining a regular exercise routine can reduce the chance of developing certain chronic diseases and the risk of dying from any reason [2]. Exercise is an essential part of a healthy lifestyle and has been linked to a number of advantages, including a lower risk of chronic illnesses, improved cardiovascular health, stronger bones and muscles, and a lower risk of falls and accidents in older persons [3].

The incidence of many chronic illnesses is rising. Among other conditions, the prevalence of obesity, diabetes, cardiovascular disease, Inflammatory Bowel Disease (IBD), and urinary stone disease (USD) is rising [4]. Additionally, mobility problems are the strongest predictor of aging and may increase the risk for all of the above chronic illnesses. Age-related chronic diseases and reduced physical mobility are on the rise as a consequence of the aging of the world's population. There are currently no widely available, inexpensive multi-condition pharmacological therapies that reduce the risk of all prevalent chronic illnesses while reducing the risk of mobility loss. These interventions should also have a minimal side-effect profile [5]. Elder patients with chronic illnesses require continuous high-level care, which must be offered in a range of settings. Their lifestyle is characterized by drastic shifts in their health status, frequent hospital readmissions, and the constant involvement of the patient, their family, and a wide range of healthcare providers over the course of years. If chronic illnesses are not well treated, they may cause acute and long-term consequences that need costly hospital stays and readmissions, which can lower quality of life and productivity [6]. Long-term treatments for chronic conditions raise the need for healthcare services and alter their character [7].

Exercise is any kind of physical exercise that is repeated, organized, and done with the goal of enhancing one or more aspects of physical fitness. It is a crucial step in the prevention of chronic illnesses, which are long-term health issues that often develop over time and are frequently linked to modifiable lifestyle factors, including smoking, poor food, and physical inactivity [8]. Figure 1 denotes the protective effects of exercise on chronic illnesses. Regular exercise may enhance general health and well-being while lowering the risk of a variety of chronic illnesses, such as cardiovascular disease, type 2 diabetes, and several malignancies.

In general, individuals should incorporate muscle-building activities on at least two days each week, along with at least 150 minutes of moderate-intensity aerobic activity per week [9,10]. The recommended quantity of exercise varies based on variables including age, fitness level, and health condition. Following is the remainder of the paper: section 2 explains relevant work, section 3 gives methods and materials, section 4 presents results and discussion, and section 5 summarizes the paper's conclusion.
Human aging is a ubiquitous, widespread, and inevitable phenomena. Each physiological function becomes worse with time. Two unique phenotypes of aging exist, and they are influenced based on patterns of behavior, experiences, and lifestyle, particularly the amount and frequency of physical activity (PA) and planned exercise. Exercise may be used to treat certain illnesses in place of medicine (such as depression), helping to achieve the prescribing of potentially unsuitable drugs (PIMS) objective [11]. Using the MEDLINE, PubMed, Embase, and CINAHL databases, a systematic review was carried out in accordance with PRISMA standards. The Academy of Nutrition and Dietetics Quality Criteria Checklist: Primary Research was used to evaluate the papers’ methodology. The index was used to confirm heterogeneity and a random-effects meta-analysis for randomized controlled trials was carried out. Estimates of the pooled mean difference between using an app and not using one were computed [12].

To help individuals avoid or reduce risk factors, adopt habits that promote better health, and consequently prevent a range of chronic diseases, effective behavior modification interventions are needed. This behavior, which is considered to be one of the most dangerous risk factors for chronic medical illnesses, is addressed using a variety of strategies, but not all of them provide the anticipated or intended outcomes. This succinct post explores current methods for altering physical exercise habits [13]. The work [14] focuses on the effectiveness of exercise from perspectives of immunology and oxidative stress and introduces outlines of such research in terms of homeostatic inflammation, which develops persistently as a result of the innate immune phenomena. Each physiological function becomes worse with time.

The study [15] uses the computer-assisted instruction (CAI) technology VD-CAI to develop a school-based public health intervention in response to these difficulties. A performance advantage for VD-CAI as an educational tool was discovered using an experimental methodology when compared to alternative pedagogies. Students that utilized VD-CAI in their physical education classes, in particular, scored higher and had a better attitude. The research [16] aims to determine the relationship between consistent physical activity and the risk of depression and its symptoms. 3,070 study samples were enrolled at baseline in 2008, and From 2008 to 2018, information from “the Korean Longitudinal Study of Aging (KLoSA)” was analyzed. Chi-square testing based on the “Generalized Estimating Equation (GEE)” and a model were used to analyze the connection between exercise and the possibility of developing depression. The goal of this perspective [17] piece was to look at how regular exercise and nutritional supplements work together to reduce the risk factors for coronavirus in cancer patients. Nutritional complements, particularly vitamin D, have been demonstrated to enhance the protected system’s reaction to cancer and COVID-19 in addition to healthy eating practices.

The study [18] mentioned that resistance training’s (RT) health advantages are not well recognized. There is mounting evidence that (RT) may, in many ways, have comparable health advantages to aerobic training (AT). In comparison to completing either activity alone, combining AT and RT may provide allegedly ideal health effects. The studies [19] examined various exercise modalities, such as strength training, aerobic exercise, or a mix of both, as well as various groups, including adults, older individuals, and children. The article [20] reviews or meta-analyses that have compiled the results of several research on the subject, as well as guidelines or recommendations from governmental or health organizations about physical exercise and the chronic illness prevention, are other examples of related works. The study [21] development of mobile self-tracking technologies highlights the advantages of an early user focus. Elderly users’ perspectives were included in the research, and those users highlighted the function’s potential to improve the app’s acceptability for prolonged usage by describing it as interesting and inspiring. The article [22] summarized the state of the art in chronic illness self-management treatments and the data supporting their efficacy, particularly when used in conjunction with a systematic application of theories or models that account for a wide variety of behavioral variables.

The purpose of the study [23] is to describe the benefits of garlic and its bioactive components for human health, with a focus on how it alters gut flora and thus influences people’s health either directly or indirectly. These studies have shown the beneficial benefits of garlic and its bioactive ingredients in treating a variety of chronic illnesses, such as hypertension, diabetes mellitus, hyperlipidemia, and liver disorders. The paper [24] presented evidence confirming the theory that the breakdown and artificialization of food matrices, rather than only the nutrient content of those foods, are primarily responsible for the worldwide increase in the prevalence of chronic diseases. The statement “food matrices govern the metabolic fate of nutrients” is foundational to this idea since it assumes that food matrices control the metabolic fate of nutrients. The study [25] creates a security protection mechanism, suggests a management strategy for managing old chronic illnesses based on the Internet of Things (IoT) security environment, and employs IoT technology to continuously track elderly patients’ vital signs.

“In order to identify healthy people and lower the number of sick individuals, the Disease Immune Rehabilitation Algorithm (DIRA) is built based on the physiological data gathered by the device”. 

**Figure 1. Exercise’s protective impact on chronic illnesses and the potential biological mechanisms behind its health advantages.**
The study [26] Internet mapping and location quotients are used to ascertain regional variations in the distribution of pharmacies for chronic diseases based on residents, while Lorenz curves are employed to evaluate the fit between the service area of the pharmacists and the population at large.

The goal of the research [27] was to incorporate variables from the literature into “the Information-Motivation-Behavioral skill model” to assess the factors affecting middle-aged men with chronic disease exercise behavior. One hundred seventy-one individuals who participate in fitness clubs make up the study’s entire sample.

**Materials and methods.**

In the context of the role of exercise in preventing chronic diseases, a suggested strategy may be planning and carrying out an investigation on the connection between exercise and certain chronic illnesses, such as cancer, type 2 diabetes, or cardiovascular disease. This might include finding volunteers and tracking their health outcomes and levels of physical activity over time, or contrasting groups of people with various exercise routines or degrees of physical fitness.

**Types of participants**

Adults who are at risk of acquiring significant chronic diseases or who have already been diagnosed with them will participate, according to the evaluations. We will limit our evaluations to those that touch on the four topics listed in the 2008 to 2013 WHO action plan on non-communicable diseases: (1) cardiovascular disease, also known as cerebral vascular disease, heart disease, which includes coronary heart or artery disease, congenital heart disease, heart failure from any cause, hypertension, heart valve disease, and ischemic heart disease; (2) chronic respiratory diseases; (3) cancer (for the purposes of this analysis, We will only discuss breast and prostate cancer here); which includes asthma; and (4) diabetes. We will also discuss dementia, osteoporosis, arthritis, depression, obesity, rheumatoid arthritis, and chronic renal disease. The summary is based on Cochrane evaluations therefore, we'll follow their inclusion criteria and, if appropriate, draw attention to the limitations of those criteria.

**Primary outcomes**

Improvements in therapy or management of chronic diseases and prevention of chronic disease development are key outcomes of curiosity. These results are going to be summarized and provided for particular chronic conditions; for instance, the prevalence of diabetes, a decline in coronary heart illness mortality, a decline in the increase in hypertension, an improvement in glucose control in diabetes, or a worsening of depressive symptoms.

**Secondary outcomes**

The design and implementation of physical activity treatments for chronic disease conditions; complications (such as injuries from physical activity, exercise, rehabilitation, or sports); transfers from the physical activity treatment; and adherence to the activities, particularly the reliability and drop-out rate over time and the connection between drop-out and the mode, quantity, and amount of physical activity are the secondary results. To the degree that it is feasible, we will also provide information on the financial efficiency of the therapeutic uses of physical exercise.

**Extraction and analysis of data**

The instructions provided in Cochrane's Handbook of Systematic Reviews of Interventions (CHSRI) will serve
Table 1. Mortality rates in the USA.

<table>
<thead>
<tr>
<th>Chronic disease</th>
<th>2002</th>
<th>2012</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular Disease</td>
<td>40</td>
<td>50</td>
<td>80</td>
</tr>
<tr>
<td>Type 2 Diabetes</td>
<td>30</td>
<td>50</td>
<td>86</td>
</tr>
<tr>
<td>Obesity</td>
<td>50</td>
<td>63</td>
<td>78</td>
</tr>
<tr>
<td>Cancer</td>
<td>58</td>
<td>79</td>
<td>90</td>
</tr>
</tbody>
</table>

Table 2. Number of deaths in the USA.

<table>
<thead>
<tr>
<th>Years</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
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</tr>
<tr>
<td>2011</td>
<td>13500</td>
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<td>2012</td>
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<tr>
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<tr>
<td>2015</td>
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<tr>
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<tr>
<td>2019</td>
<td>15000</td>
</tr>
<tr>
<td>2020</td>
<td>15500</td>
</tr>
<tr>
<td>2021</td>
<td>15700</td>
</tr>
<tr>
<td>2022</td>
<td>15800</td>
</tr>
</tbody>
</table>

Table 3. Number of Incidence in the USA.

<table>
<thead>
<tr>
<th>Years</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>2300</td>
</tr>
<tr>
<td>2011</td>
<td>2200</td>
</tr>
<tr>
<td>2012</td>
<td>2100</td>
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<td>2013</td>
<td>2000</td>
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<tr>
<td>2014</td>
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<td>2019</td>
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</tr>
<tr>
<td>2020</td>
<td>1800</td>
</tr>
<tr>
<td>2021</td>
<td>1720</td>
</tr>
<tr>
<td>2022</td>
<td>1700</td>
</tr>
</tbody>
</table>

as the foundation for the technique for data extraction and analysis. We'll get the complete text of a few chosen reviews. Using a present data extraction form from each included analysis, if there are any differences, these will be settled by discussion and consent; key findings from each review will be summarized in the data extraction form, including information about populations, context (for example, prevention, action, or management), participants, interventions, delivery method, and duration, comparisons, results, and follow-up time. Wherever feasible, outcomes shall contain both positive and negative consequences of the interventions.

Results.
The results of the exercise in chronic disease prevention are presented in this section. Long-term health disorders known as chronic illnesses may have complicated, multifaceted origins and generally progress slowly over time. “Heart disease, stroke, cancer, chronic respiratory conditions including asthma and chronic obstructive pulmonary disease, diabetes, obesity, and arthritis” are a few examples of chronic illnesses. In most cases, chronic illnesses are not contagious and are not brought on by infectious agents; instead, they are brought on by a mix of genetic, behavioral, and environmental variables, including dietary habits, physical activity, and exposure to chemicals or pollutants.

Cancer
Most epidemiological research has shown an inverse relationship between cancer risk and physical activity. Exercise and cancer prevention have varying degrees of evidence, which are categorized as persuasive, likely, possible, and inadequate. Colon and breast cancer has the strongest and clearest scientific evidence among site-specific cancer studies (For colon cancer, typical risk reductions are between 40 to 50%, while for breast cancer, usually range from 30 to 40%), while weaker and less reliable endometrial evidence and is classified as "probable" or prostate and lung "possible." Confirm the adverse correlation between exercise and the incidence of colon and breast cancer shown in figure 2. Recent studies support earlier data; seven of the eight newly published studies revealed a relative risk decrease for breast cancer that is statistically significant. High danger magnitudes accompany change ranging from 20 to 72%. High amounts of recreation were adversely linked with the risk of breast cancer.

Cardiovascular diseases
Heart illness has many kinds such as “rheumatic heart disease, coronary heart disease (CHD), high blood pressure (hypertension), and stroke, are all considered cardiovascular diseases (CVD)”. For various research designs and populations, the preventive effects of regular effects of exercise and physical activity on blood pressure, cholesterol, blood sugar, and other CVD risk variables, and triacylglycerol levels have been shown. It is essential to note that Faff's study from 2004 emphasizes the importance of physical exercise and fitness in lowering cardiovascular disease mortality. According to various research analyses, the increased physical activity is associated with decreased cardiovascular disease morbidity and mortality as well as a decrease in the overall death rate not only in younger or middle-aged people but also in seniors. Numerous pieces of training have also exposed that exercise training enhances people's quality of life with heart failure, and it is advised as a component of routine care. Figure 3 summarizes the data on the association the risk of CVD or CHD and physical activity from research published between 2004 and 2007 as well as from a newly published meta-analysis.

The Caucasian group (13,054 live controls and 24,079 dead cases) also showed an important reduction in CVD-related mortality as an outcome of leisure-time physical exercise. Both sexes in this research showed an inverse association among PA and the chance of dying from a heart-related cause, although Men had a greater activity-mortality gradient than women did.

Diabetes mellitus type 2
Worldwide, diabetes mellitus (type 2) is a major cause of illness. There were an estimated 171 million persons with diabetes mellitus worldwide in 2000, and it is predicted that
by 2030, there will be 366 million cases of the condition. The results of multiple researches have shown that exercise helps stave off type 2 diabetes, according to statistics from significant prospective cohort trials and randomized controlled trials. In a recent study, it was shown that those who were physically active had a significantly lower chance of developing diabetes mellitus (OR=0.645, 95% CI=0.456-0.911). According to a report, the following types of exercise are advised for people with type 2 diabetes: running, walking, swimming, or bicycling for at least 30 minutes every training course, three to five days a week, at an intensity of 40 to 60 percent of maximum VO2 or 50 to 70 percent of highest heart frequency, or 90 minutes per week at a quantity of more than 60 percent of VO2max or more than 70 percent of maximum heart rate. According to scientists, engaging in this level of physical activity may guarantee that metabolic and cardiorespiratory gains are made.

Obesity
Numerous epidemiological studies support the hypothesis which has high BMI is related to the development of various diseases, such as type 2 diabetes, heart disease, and some types of cancer such as “colon and prostate cancer in men and breast, endometrial, cervix, and ovarian cancer in women”. Recently, the link between BMI and cancer has received a lot of attention. Participants with hypertension who lost weight over time kept it off, indicating that there were long-term benefits as well as a long-term decrease in cardiovascular risk. Figure 4 depicts the trends in chronic disease. Obesity is becoming more common in wealthy nations, especially in the “United States of America (USA) and West Europe. In the USA, it is estimated that over 50% of Americans are overweight (BMI=25-27, 8 kg/m2) and that 21% of American adults are fat (BMI≥30 kg/m2) (American Cancer Society, 2003)”. In Europe, 10–20% of males and 15–25% of women suffer from obesity.

Discussion.
Mortality rates
Chronic illness prevention and general health improvement have both been linked to regular exercise. The danger of damage or even death exists, just as with other physical exercise. Exercise-related fatality rates are minimal, although they do rise with age and the existence of underlying medical disorders. Figure 5 shows the number of deaths in the USA. It’s important to remember that the advantages of regular exercise exceed the hazards and that these risks may be reduced by adhering to the right safety precautions and seeking medical advice before beginning an exercise program, particularly if you have a pre-existing medical condition.

Incidence rates
A decreased incidence of chronic conditions, including stroke, heart disease, type 2 diabetes, and several cancers, is linked to regular exercise. The kind, intensity, and duration of the exercise undertaken, as well as other factors like age, sex, and general health, all affect how much risk reduction is achieved. Figure 6 depicts the number of Incidence in the USA. Regular physical exercise may lower the risk of heart disease by up to 35%, stroke by up to 25%, and type 2 diabetes by up to 50%, according to studies.

Conclusion.
The main factor contributing to the worldwide increase in chronic disease death rates is the ongoing rise in sickness incidence rates. Both in “wealthy nations and in middle-to-low-income economies, chronic illness fatalities predominate”. Because of the rising prevalence of these diseases in adults, chronic illnesses including type 2 diabetes and obesity have begun to show up in children and teenagers. Incorporating PA and exercise into everyday activities improves overall global health, fosters societal development, and provides both prevention and therapy for long-term chronic illnesses. Therefore, Exercise and PA offer a non-invasive method of treating and preventing chronic diseases. Future research should focus on overcoming barriers to more physiologic, biochemical, and molecular information regarding the health advantages of PA and exercise are useful, but so are efforts to encourage more individuals to participate in regular exercise and to better understand the interactions between PA and drugs.
REFERENCES


