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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии

საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

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GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНИТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНИТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

WEBSITE

www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman** (**Кириллица**), для текста на грузинском языке следует использовать **AcadNusx.** Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - http://www.spinesurgery.ru/files/publish.pdf и http://www.nlm.nih.gov/bsd/uniform_requirements.html
В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректура авторам не высылается, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or compu-ter-printed on a single side of standard typing paper, with the left margin of **3** centimeters width, and **1.5** spacing between the lines, typeface - **Times New Roman** (**Cyrillic**), print size - **12** (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf
In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

Articles that Fail to Meet the Aforementioned Requirements are not Assigned to be Reviewed.

ავტორთა საყურადღებოდ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დავიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე,დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx.** შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შეღებვის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფჩხილებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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THE ROLE OF EXERCISE IN PREVENTING CHRONIC DISEASES: CURRENT EVIDENCE AND RECOMMENDATIONS

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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.

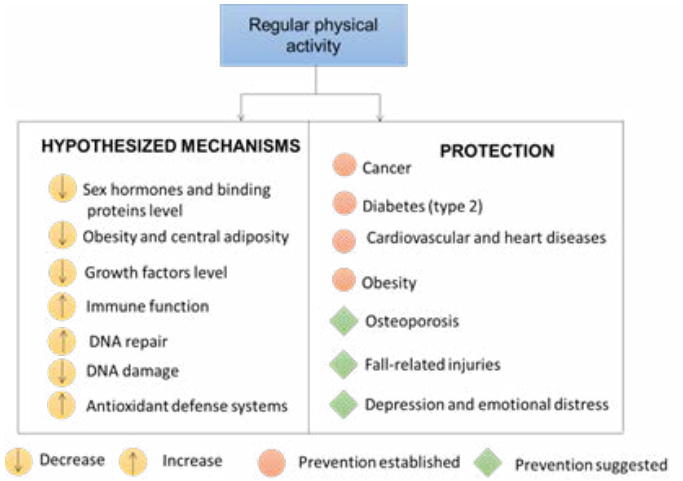

Figure 1. *Exercise's protective impact on chronic illnesses and the potential biological mechanisms behind its health advantages.*

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 system and its aberrations. Additionally addressed and detailed are the preventive benefits of functional dietary elements when combined with exercise.

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".

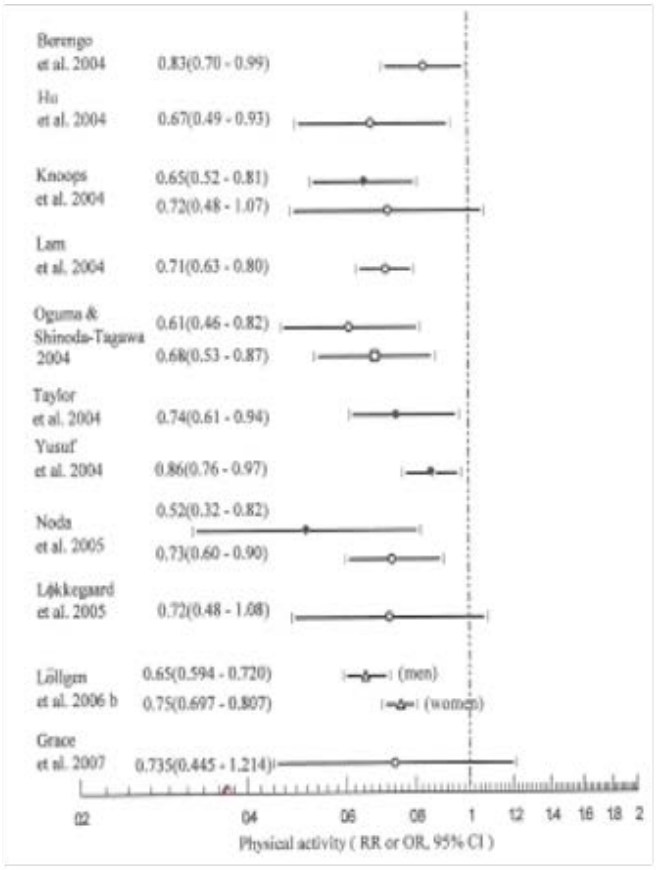

Figure 3. *Physical Activity with Cardiovascular and Heart Diseases: Relative Risk Estimates with 95% Confidence Intervals. ("Source:https://www.researchgate.net/figure/Relative-Risk-Estimates-and-95-Confidence-Intervals-CI-for-Cardiovascular-and-Heart_fig1_5689403")*

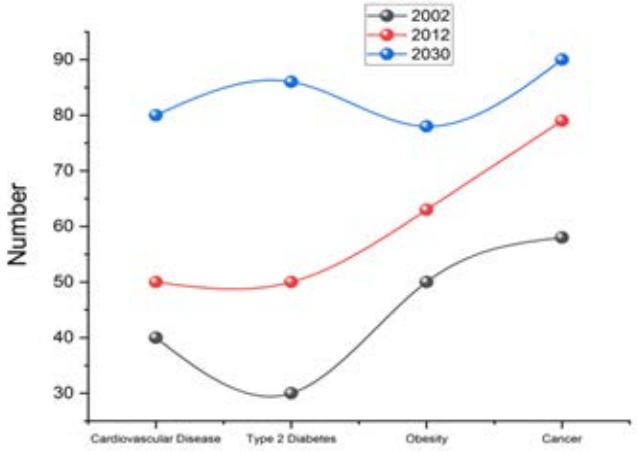

Figure 4. *Estimates of the relative risk for cancer disease and exercise, together with 95% confidence intervals (CI).*

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 asthenia; 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.*

Chronic disease	2002	2012	2030
Cardiovascular Disease	40	50	80
Type 2 Diabetes	30	50	86
Obesity	50	63	78
Cancer	58	79	90

Table 2. *Number of deaths in the USA.*

Years	Number
2010	13000
2011	13500
2012	14000
2013	14200
2014	14250
2015	14500
2016	14620
2017	14650
2018	14700
2019	15000
2020	15500
2021	15700
2022	15800

Table 3. *Number of Incidence in the USA.*

Years	Number
2010	2300
2011	2200
2012	2100
2013	2000
2014	1920
2015	1910
2016	1900
2017	1870
2018	1860
2019	1850
2020	1800
2021	1720
2022	1700

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, theIncreased 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

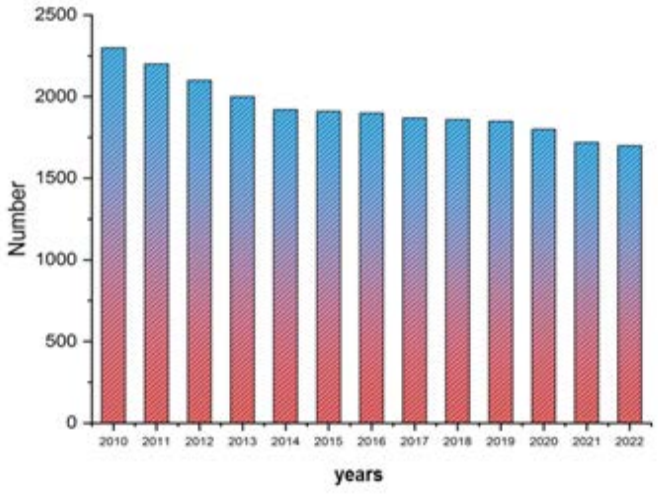

Figure 5. *Number of deaths in the USA.*

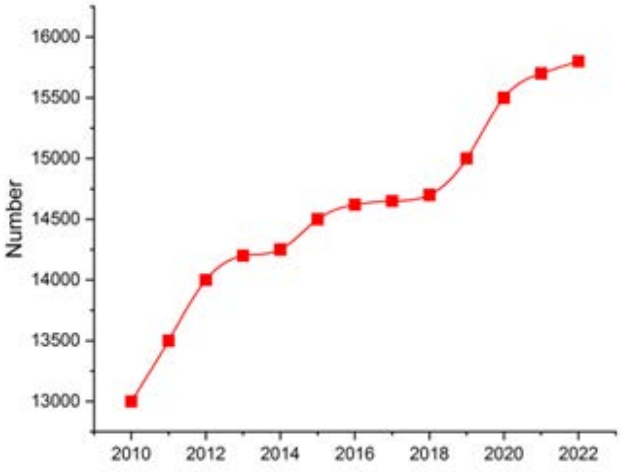

Figure 6. *Number of Incidence in the USA.*

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.

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