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HEALTH BENEFITS OF REGULAR PHYSICAL ACTIVITY: A LITERATURE REVIEW

Abstract: Physical activity is an essential factor in defining both physical and psychological health. Regular physical activity has a positive impact on the emergence and progression of a number of chronic diseases, well-being and has a beneficial effect on communities and society. Unfortunately, more than 60 per cent of adults around the world do not achieve the recommended levels of physical activity. The purpose of the present study was to determine the relationship of physical activity levels and healthy lifestyle.

Key words: physical culture, physical activity, sport, healthy lifestyle.

Language: English

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Introduction

Introduction and background

Physical activity is central to health, and its importance clearly extends beyond its role in achieving energy balance to prevent and treat obesity and overweight. Adequate daily physical activity improves cardiovascular health, metabolic health, brain and mental health, and musculoskeletal health - benefits that recent research shows are gained across the life span.

The term 'physical activity' can mean many different things to different people. For public health professionals, it is a health-enhancing behavior; others may see it as a phrase summing up a wide range of sports, leisure pursuits or active travel. But it is easy to forget that physical activity – or human movement – is actually one of the most basic human functions. The human body evolved to move, and our physiological systems are continuously working to balance the energy we expend through physical activity with the energy we take in as food. A century ago, obesity was rare, as people spent far more energy in manual work and walked more for transport, and energy-dense food was less easily available. However, in the twenty-first century, our lifestyles have changed

beyond all recognition: so much physical activity has been removed from our lives that we have at last discovered how essential it is to human health and well-being. It remains the foundation of our health throughout life. The first steps a baby takes mark a critical milestone in that child's development, as it sets off toddling into the world. Throughout childhood, physical activity offers opportunities to develop basic motor skills that are essential for healthy active living. And as we enter old age, physical activity becomes a critical component of a healthy, happy and independent life.

The main sources of health-enhancing physical activities encompass normal and simple activities such as walking, cycling, manual labor, swimming, skiing, hiking, gardening, recreational sport, and dancing. **Physical activity** is generally defined as any bodily movement produced by skeletal muscles that results in energy expenditure above resting level [1][2]. In this document, the concept of physical activity consequently comprises all forms of activity that conform to that definition.

The terms exercise and physical fitness are closely related to, but distinct from, physical activity.

Exercise is a subset of physical activity, defined as

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planned, structured, and repetitive bodily movement done to improve or maintain one or more components of physical fitness. **Physical fitness** is a set of attributes that people have or achieve that relates to the ability to perform physical activity [1].

Physical activity refers to any bodily movement that is produced by the skeletal muscles and results in energy expenditure; whilst exercise is a subset of physical activity since it is a planned, structured and repetitive process that aims to maintain and improve physical fitness [1]. There is a growing body of interest that physical activity and exercise confer favorable health outcomes across the lifespan. In addition, physical activity has been consistently linked to decreased all-cause mortality rates, probability of late survival [3][4][5], good health and function during older age [6] as well as to cognitive performance [7].

Physical activity can vary widely in intensity: the amount of effort made by an individual. Intensity varies according to the type of activity and the capacity of the individual. For example, running is usually of a higher intensity than strolling, and a young, fit person is likely to walk at a given pace more easily than an older, less fit person.

At the Asian Games in Indonesia, held in August-September, our country's athletes won 21 gold, 24 silver and 25 bronze medals, 70 medals in total. The fifth place by our country in terms of the number of gold medals was the best result in the history of Uzbek sports.

This year, at the expense of the Fund for the Development of Physical Culture and Sports, it is planned to build 56 sports facilities with the allocation of 362 billion soums for this. However, as of September 10, construction and installation work was completed for only 113 billion soums. There is a lag in this respect in the Syrdarya, Navoi, Tashkent regions and the city of Tashkent. [18]

Research methodology

For this study used a review of the narrative literature to describe and analyze the impact of exercise (physical activity) and healthy eating on the physiological, mental and social well-being of the population. The articles were obtained from Science Direct and Scopus database searches, the results were categorized according to the keywords used.

Results

The most recent prevalence data summarizing global physical activity patterns indicate that a third of all adults and four fifths of youth/adolescents are physically inactive (Table 1). The prevalence of physical inactivity is consistent across high, middle, and low income countries. What's even more alarming is that more than half of the world's adults are not participating in the minimal amount of physical activity necessary to obtain some health benefits

Table 1. Prevalence of insufficient physical activity in 2016

	Overall percentage of insufficient physical activity (95% UI)	Percentage of men with insufficient physical activity (95% UI)	Percentage of women with insufficient physical activity (95% UI)
All countries	27.5% (25.0–32.2)	23.4% (21.1–30.7)	31.7% (28.6–39.0)
Central Asia, Middle East, and north Africa	32.8% (31.0–35.2)	25.9% (23.7–28.7)	39.9% (37.9–42.7)
Central and eastern Europe	23.4% (20.9–28.0)	22.0% (18.6–28.8)	24.7% (21.7–33.9)
East and southeast Asia	17.3% (15.8–22.1)	17.6% (15.7–23.9)	16.9% (14.9–25.7)
High-income Asia Pacific	35.7% (34.4–37.0)	33.0% (29.4–33.6)	38.3% (37.4–42.6)
High-income Western countries	36.8% (34.6–38.4)	31.2% (28.5–32.6)	42.3% (39.1–45.4)
Latin America and Caribbean	39.1% (37.8–40.6)	34.3% (32.5–35.5)	43.7% (42.9–46.5)
Oceania	16.3% (14.3–20.7)	12.3% (11.2–17.7)	20.3% (18.8–28.7)
South Asia	33.0% (23.0–51.7)	23.5% (14.4–54.3)	43.0% (29.6–74.9)
Sub-Saharan Africa	21.4% (19.1–23.3)	17.9% (15.1–20.5)	24.8% (21.8–27.2)
Low-income	16.2% (14.2–17.9)	13.4% (11.3–15.6)	18.8% (15.9–21.4)
Middle-income	26.0% (22.6–31.8)	21.9% (18.9–31.3)	30.1% (26.0–39.5)
High-income	36.8% (35.0–38.0)	32.0% (29.8–33.1)	41.6% (39.1–43.9)

Source: *The Lancet Global Health*, 2018 [https://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(18\)30357-7/fulltext](https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(18)30357-7/fulltext)

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A general consensus has been reached in recent years on the amount and type of physical activity recommended to improve and maintain health. While there is no official recommended level of physical activity, international expert opinion has supported the accumulation of at least half an hour of moderate-

intensity physical activity on most days of the week. These are general guidelines only, and are likely to be modified to suit the needs and circumstances of individuals, and to reflect the values and cultures of different countries. **Table 2** lists examples of health-enhancing physical activity for people of all ages.

Table 2. How people of all ages could reach the recommended levels of physical activity

Person	Activities
Young child	Daily walk to and from school Daily school activity sessions (breaks and clubs) 3–4 afternoon or evening play opportunities Weekend: longer walks, visits to park or swimming pool, bicycle rides.
Teenager	Daily walk to and from school Daily school activity sessions (breaks and clubs) 3–4 afternoon or evening play opportunities Weekend: longer walks, visits to park or swimming pool, bicycle rides.
Teenager	Daily walk to and from school Daily school activity sessions (breaks and clubs) 3–4 afternoon or evening play opportunities Weekend: longer walks, visits to park or swimming pool, bicycle rides.
Adult with paid job	Daily walk to and from school Daily school activity sessions (breaks and clubs) 3–4 afternoon or evening play opportunities Weekend: longer walks, visits to park or swimming pool, bicycle rides.
Adult working in the home	Daily walk to and from school Daily school activity sessions (breaks and clubs) 3–4 afternoon or evening play opportunities Weekend: longer walks, visits to park or swimming pool, bicycle rides.
Adult, unemployed	Daily walk to and from school Daily school activity sessions (breaks and clubs) 3–4 afternoon or evening play opportunities Weekend: longer walks, visits to park or swimming pool, bicycle rides.
Retired person	Daily walking, cycling, home repairs or gardening Taking all small opportunities to be active: using stairs, doing manual tasks Weekend: longer walks, cycling or swimming.

Source: Adapted from [8].

Physical activity has major beneficial effects on most chronic diseases (Table 3). These benefits are not

limited also extremely important for people who are already overweight or obese [9].

Table 3. Summary of the health effects associated with physical activity

Condition	Effect
Heart disease	Reduced risk
Stroke	Reduced risk
Overweight and obesity	Reduced risk
Type 2 diabetes	Reduced risk
Colon cancer	Reduced risk
Breast cancer	Reduced risk
Musculoskeletal health	Improvement
Falls in older people	Reduced risk

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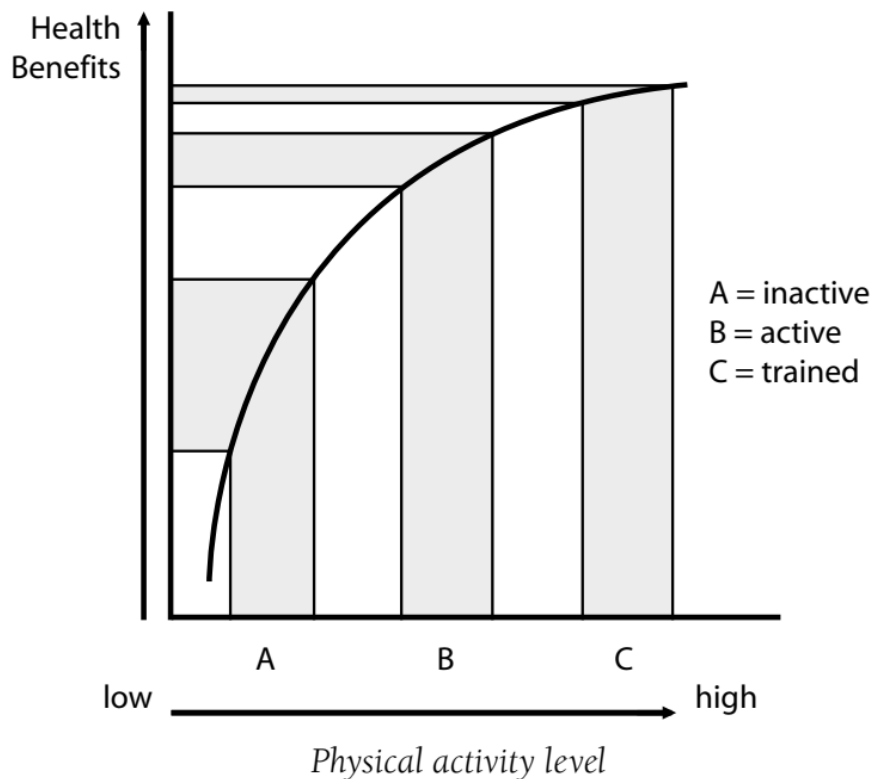
Psychological well-being	Improvement
Depression	Reduced risk

During the past decade, several assessments of the available scientific evidence have shown the powerful potential of physical activity to benefit health [10]. A recent review [11] states that there is now strong evidence showing that physical activity has beneficial effects on the pathogenesis of all important metabolic syndrome-specific disorders (insulin resistance, type 2 diabetes, dyslipidemia, hypertension and obesity), all important heart and vascular diseases (coronary heart disease, chronic heart failure, intermittent claudication), and osteoporosis. There is also strong or moderate evidence illustrating the positive health effects on the disease-specific symptoms of all these diseases and those of chronic obstructive pulmonary disease, osteoarthritis, fibromyalgia, chronic fatigue

syndrome, certain types of cancer and depression. Additionally, in virtually all disease states, there exists strong or moderate evidence to show that physical activity improves functional capacity and quality of life.

Mortality rates from non-communicable diseases increase with high body weights and are markedly increased at levels designated as obese (body mass index above 30). Regular physical activity is a protective factor against unhealthy weight gains [12]. The role of physical activity in the management of overweight and obesity is threefold: 1) prevention of weight gain; 2) prevention of health consequences of obesity; and 3) weight reduction [13]. From the public health perspective, areas 1 and 2 are the most important.

Dose-response for PA and health



Picture 1.

As shown in the dose-response curve above [14], most health benefits from a given increase in physical activity are achieved through moderate increases in physical activity for inactive persons (section A). Promotional efforts should focus on regular moderate-intensity lifestyle activities. Additional health benefits

are achieved by practicing more and profitably diverse activity.

Recommended levels and modes of physical activity

Based on physiological, epidemiological, and clinical evidence, international experts agree that, to produce substantial health benefits, the adequate level

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of physical activity for adults can be expressed as follows: Every adult should accumulate 30 minutes or more of moderate-intensity physical activity on most, preferably all, days of the week [14]. Moderate-intensity physical activity corresponds to quick or brisk walking. Cycling, swimming and gardening with moderate effort are other modes of moderate-intensity physical activity.

The recommended duration of 30 minutes can be split up into shorter periods, ideally no less than 10 minutes [15], but even shorter bouts contribute to substantial health benefits. A good example of this is using stairs instead of elevators. Adults who do not meet the recommended level of activity should increase their participation in different ways.

Those who do not engage in regular physical activity should begin by incorporating a few minutes of increased activity into their day, building up gradually to 30 minutes per day. Those who are active on an irregular basis should strive to adopt a more consistent activity pattern [14].

All movement contributes to energy expenditure and is important for weight management. However, it is likely that for many people, 45–60 minutes of moderate-intensity physical activity per day is necessary to prevent weight gain or reduce overweight. This figure is influenced by individual metabolic rate, food intake and type of diet.

To improve or to specialize in different forms of fitness (e.g. respiratory fitness, muscular strength, and different sports), a selection of various types of fitness-adapted activities is needed. If such more or less specialized and repeated activities are added to the basic recommended amount of moderate-intensity physical activity, improvements in both fitness and health will be achieved.

The recommendations for adults are also appropriate for older adults. Older people should take particular care to keep moving and retain their mobility and their lean body mass through daily activity. Additionally, specific activities that promote improved strength, coordination and balance are particularly beneficial for older people [16].

Current physical activity recommendations for children and young people are: All young people should participate in physical activity of at least moderate intensity for 60 minutes per day. At least twice a week some of these activities should help to enhance and maintain muscular strength, flexibility, and bone health [16]. The activity may be divided into shorter periods throughout the day, and should be as versatile and inspiring as possible.

A recent study suggested that physical activity levels in children should be about 30 minutes higher than the current international guidelines of at least 60 minutes per day of physical activity of at least moderate intensity, to prevent clustering of cardiovascular disease risk factors.

Another important issue concerning childhood health is weight control. Regular physical activity can help prevent and reduce obesity or maintain a healthy weight.

Arthritis

Regular physical activity such as ordinary weight bearing activities done on daily basis is necessary for maintaining normal muscle strength, joint structure and joint function. These qualities help to protect joints from injuries, abnormal movements and limited range of motion, and secure nutrition of the joint cartilage and lubrication of joint surfaces. Regular physical activity also helps in maintaining healthy weight. All these effects contribute to maintenance of healthy joints. In patients with degenerative and rheumatic arthritis physical activity programs consisting of parts aiming at cardiovascular conditioning, improvement in strength, added flexibility and increased joint mobility have resulted in better function and less symptoms. Occupational or recreational activities that expose a joint to excessive impacts, pressure, range of motion or injuries increase the risk of developing osteoarthritis.

High blood pressure

Regular moderate physical activity as well as good physical fitness prevents the development of hypertension in mild to moderate degree and that type of activity lowers elevated blood pressure in male and female patients of various ages having mild to severe hypertension. The mechanisms include attenuation of adrenergic sympathetic activity, increased cellular insulin sensitivity and decreased level of circulating insulin, decreased peripheral resistance, increased baroreflex sensitivity, changes in renin-angiotensin-aldosterone system and reduction in body fat. Improved relaxation/decreased tension and anxiety are examples of indirect mechanisms. In patients with severe hypertension physical activity may lead to decrease of left-ventricular mass. The effects on blood pressure of physical activity and some dietary factors and drugs are additive.

Weight management

Low levels of physical activity are a significant factor in the dramatic increase in obesity prevalence in the Central Asian Region. Obesity occurs when energy intake (dietary intake) exceeds total energy expenditure, including the contribution of physical activity.

Body weight normally increases with age, but habitual, lifetime physical activity can reduce weight gain. Participation in appropriate amounts of activity can support healthy weight maintenance or even weight loss. It is also extremely important for people who are already overweight or obese.

Physical activity is recommended as part of a comprehensive weight loss therapy and weight maintenance program because it modestly contributes to weight loss, may help with maintenance of weight loss, increases cardiorespiratory fitness and appears to

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have an independent beneficial effect on several commodities of obesity. Physical activity contributes to two parts of energy expenditure. First, it is essential in the development and maintenance of lean body mass that determines in major part the size of resting energy expenditure (approximately 60% of total energy expenditure). Physical activity is especially important to counteract the loss of muscle mass particularly in men after age 50. Physical activity also may influence favorably distribution of body fat. Secondly, physical activity itself increases the non-resting energy expenditure (about 30% of the total) during the activity. Even non-exercise activity, activities of daily living, fidgeting, spontaneous muscle contraction, and maintaining posture, may make a significant contribution to energy expenditure and be an important factor in the prevention of weight gain. Thus, all kinds of physical activities of daily life are important for weight control. The potential importance of physical activity for health through its effect on body weight can be estimated by the number, prevalence and severity of obesity-caused or related diseases.

Immune function and infections

A bout of physical activity causes clear responses in several indices of the immune system. In general mild to moderate physical activity causes stimulation and hard (volume, intensity) activity suppression have been tried in athletes to counteract the immune suppression but so far the results have been inconclusive. Continuous physical training seems not to cause long-lasting adaptive changes in the immune system but rather summation effects from acute responses to frequently repeating activity bouts. A possible exception is the significant elevation in the natural killer cell activity as a result of training. However, a few studies and experiences from competitive athletes suggest that very heavy acute or chronic exercise may increase the risk of upper respiratory tract infection, while moderate physical activity may reduce the symptoms of this condition. These findings have led to the 'Inverted J Hypothesis' in exercise immunology. As a whole, the area of exercise immunology is relatively new, and there are inconsistent findings on the immune responses and it is not yet clear whether some of the observed changes are beneficial or detrimental [17].

Mental health and health-related quality of life

The effects of physical activity on mental health and psychological well-being are less thoroughly studied than those related to biological health. Physical activity appears to decrease symptoms of depression, anxiety and tension, and to improve mood. Regular physical activity may reduce symptoms of clinical unipolar depression and the risk of developing depression, although further research is needed on this topic. Physical activity appears to improve health-related quality of life by enhancing psychological

well-being (e.g., self-concept, self-esteem, mood, and affect) and by improving physical functioning, especially in persons compromised by poor health. Engagement in physical activity may increase the psychological well-being independently of changes in cardiorespiratory fitness. Several plausible, partly biological mechanisms to explain the psychological effects of physical activity have been suggested but more research is needed for their verification. The effects appear to depend strongly on individual and circumstantial factors, and thus they are less predictable than the biological effects. Thus, beneficial activities on individual level are currently to a large extent a matter of personal experimentation.

Psychological well-being

Physical activity can reduce symptoms of depression and, possibly, stress and anxiety. It may also confer other psychological and social benefits that affect health. For example, it can help build social skills in children, positive self-image among women and self-esteem in children and adults, and improve the quality of life. These benefits probably result from a combination of participation itself and the social and cultural benefits of physical activity.

Finally, physical activity tends to be associated with other types of positive health behavior, such as healthy eating and nonsmoking, and can be used to help make other behavioral changes. Overall, it is such a positive health behavior – with so much potential to improve public health and so few risks – that it deserves to be central to any future public health strategy.

Conclusion

There is empirical evidence implicating physical inactivity in several lifestyle disorders such as diabetes, obesity and hypertension. Based on this evidence, it is recommended that lifestyle interventions such as promotion of physical activity in populations would result in significant improvements in health outcomes. This paper describes how physical activity substantially reduces the risk of chronic disease, and its importance for overall health and wellbeing.

In summary, regular physical activity causes numerous and substantial physiological performance improving and health-enhancing effects. These effects are seen especially in organs and functions primarily involved in physical activity, i.e. neuromuscular, cardiorespiratory and metabolic functions. Most of these effects are dose-dependent, highly predictable and generalizable to a wide range of population groups. Many of the biological effects of regular physical activity translate into decreased morbidity and mortality. This is especially true concerning degenerative diseases of the organ systems mentioned above and include some of the most common morbid or premorbid conditions of the populations of industrialized countries, such as coronary heart

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disease, cerebrovascular disease, hypertension, maturity onset diabetes, overweight and obesity, osteoporosis, and poor physical and health-related fitness. In these conditions causal link to lack of physical activity has been established with great certainty, and increased physical activity has been shown to decrease the risk of most of these conditions. The risk caused by physical inactivity is of the same order of magnitude as that of other modifiable risk factors of these conditions. The amount and type of physical activity that is needed to decrease the risk substantially is moderate in both absolute and relative terms, but only a minority and decreasing part of the populations in industrialized as well as in other countries is sufficiently physically active. All these facts taken together mean that the burden to population health caused by physical inactivity is very great and the potential to improve population health by increased physical activity is also great. Because sufficient physical activity for health is feasible to practice and very widely accepted among most population groups, a substantial part of the health potential of physical activity is likely to be realizable. However, there are a number of real and perceived

individual and environmental obstacles hindering regular engagement in health-enhancing physical activity. Most of these obstacles can, however, be decreased by developing and implementing effective policies [19-26].

Nutrition and physical activity, two of the essential conditions of daily living, have strong, simultaneous and continuous influences on health. Adequate nutrition and physical activity improve health synergistically and partly additively, but inadequacies in one or the other lead to deleterious consequences. The basic metabolic pathways influencing health in positive or negative ways either through nutrition or physical activity are largely the same. It is obvious that policies and measures aimed at improving health have to include both nutrition and physical activity as strong components in order to be effective. Currently, development of nutrition policies are emphasized in most nations and international organizations, on legitimate grounds, but for the next adequate weight should be given also to develop and implement effective policies and measures to offer opportunities and incentives for health-enhancing physical activity for all population groups.

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