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Physical activity and health

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Abstract:

This study aims to show the role of physical activity and its relationship to health among individuals and society. The researcher started from the question: What is the extent of the effect of physical activity on various common diseases such as diabetes, obesity, heart diseases, and others? The researcher used the descriptive method, by analyzing previous studies and various researches related to the research variables. The study concluded that regular physical activity reduces the risk of some common problems and illnesses, such as overload weight , hypertension, cardiovascular disease, type 2 diabetes, osteoporosis, as well as colon and breast cancer. In addition, playing sports has a positive effect on mental well-being and quality of life. Active people live longer. As they age, they are also in better intellectual shape and require less care. In this synthesis, we describe the relationship between physical activity and health-related quality of life.

Keywords: activity ,Physical activity , health

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1. INTRODUCTION

Generations that have transmitted to us much more physical effort than us. The social changes induced by technical progress have sedentarized our daily lives. While it is true that the mechanization of work, the motorization of transport, as well as the use of household appliances and modern means of communication, have made our lives easier in many ways, the other side of the coin is obvious; the most people can no longer use their body, neither to work, nor to clean, nor to move. Or, this development is negative for human health. Because our body was designed to walk for days in the steppe in search of its subsistence by practicing a nomadic activity of hunting and gathering. Thus, our body always needs a certain amount of physical exercise to function well and stay healthy. The practice of regular physical activity is considered to be one of the important determinants of the state of health, at any age.

Relatively new, the field of research relating to physical activity and health has grown in importance in recent years. On the one hand, the evolution of scientific methods and new technologies now makes it possible to question the complex relationship between movement and health.

Through the above, we ask the following question: what is the relationship between physical activity and various diseases?

2- Definitions

2-1- Health

It is not only the absence of disease but more generally a general state of physical, mental and social well-being, as defined by the World Health Organization (WHO). (Agence, 2001, p. 8)

2-2- Physical activity

In a word: “move”! Setting the body in motion requires the activation of the heart-lung-vessel system. Walking, climbing stairs, gardening... or sports activities, practiced regularly, lead to an extension of life expectancy as well as an improvement in the quality of life. (Basrur, 2004, p. 54)

2-3- Sports practice

It is exercised individually or supervised. Practiced regularly, of varying intensity, organized according to rules, it requires respect for precautions. The practice of sport solicits both the physical and the mental because of the technicality required. (Basrur, 2004, p. 146)

2-4- Competition

It corresponds to an intense sports activity imposing a heavy workload on the body on the cardiopulmonary and osteo-articular levels. It involves being in good health and can cause problems if precautions are not taken. (Boini, 2005, p. 258)

2-5- Prevention through the practice of physical activity

The World Health Organization (WHO) defines prevention as “all measures aimed at avoiding or reducing the number or severity of illnesses or accidents”. (Bouvet, 2013, p. 23)

2-6- Obesity

This term is much more medical and precise than the expression "to be fat"! .The criteria that define it are recognized and used worldwide: it is excess body fat. can have adverse effects on health and life expectancy. Obesity is therefore a disease accompanied by complications. (Bouvet, 2013, p. 37)

2-7- Aging

The body's reactions change naturally over time: the cardiovascular and pulmonary system loses its efficiency, the skeletal, osteo-articular and musculo-tendinous system weakens...

With increasing age (up to around 50), aging and sedentary lifestyles go hand in hand, increasing the effects of aging alone.

2-8- Sedentary life

Synonymous with physical inactivity, it can be defined concretely by the practice of less than one hour of walking (or equivalent) per day. Physical inactivity is a very important risk factor for the onset of cardiovascular disease. The numbers speak for themselves. In the United States, physical inactivity is responsible for 10% of annual deaths! (Bouvet, 2013, p. 32)

3-How our body works

1- Ingested food

2- Absorption of food in the digestive tract

3- Transformation of food into energy

4- Storage as fat

3-1- In case of prolonged inactivity

Prolonged inactivity associated with an inadequate diet can only have harmful consequences on health:

• Too much food leads to the ingestion of energy that will not be fully used, resulting in storage in the form of fat.

• Poor food quality leads to the storage of undesirable elements also in the form of fat.

The consequences are an increase in fat mass and clogging of the vessels which gradually become clogged.

The energy demand at rest responds to a minimum operation.

Weight remains stable if energy intake and expenditure are equal.

3-2-In case of regular physical activity

During physical exercise, all muscles (cardiac, respiratory, peripheral limbs and trunk) require additional energy to contract and work effectively. The central control system (brain) also requires “fuel” to give its orders during physical

exercise. The foods eaten during meals provide this energy. The heart, thanks to its beats, sends the blood charged with energy into the vessels. These transport towards the periphery (brain and muscles mainly) the energy which is used quickly without reserve. For greater efficiency, the body has its own regulatory mechanisms that make it use, if necessary, its energy reserves stored in the form of fat. (comité, 2000, p. 288)

4-Essential parameters for good sports practice

The essential parameters for a good sports practice are its frequency, its duration, its intensity. The goal is to perform at least 3 sessions per week, 20 to 30 minutes each and of moderate intensity. A higher intensity involves risks of complications in the case of declared diseases but it is quite accessible to people whose medical check-up does not reveal any anomaly. Physical activity always brings a benefit to the sedentary, even if it is practiced to a lesser extent than the recommended minimum. It has lasting effects provided you persevere, otherwise its effectiveness will diminish. Begin any session with a warm-up and end with slow stretching.

For those resistant to the practice of physical and/or sports activities: The objective to be achieved is 30 minutes of brisk walking (or equivalent) per day. This activity can be exercised intermittently, taking advantage of all opportunities: walking to get to work or shopping, getting off at a bus or metro stop before reaching your destination, preferring stairs to escalators, performing gardening or housework… . (institut, 2009, p. 67)

5-The different sports or physical activities that can be practiced

Physical activities are of 3 types:

- leisure activities (sports, training, competitions, performances)
- domestic activities
- professional activities

Most activities are beneficial. Sports carried such as swimming and cycling carry little risk. Walking and jogging are also safe despite some restrictions. Strength training, beneficial for fighting osteoporosis, can however, in some cases, be harmful because it increases blood pressure and can promote hypertension.

Examples of activities and associated coefficients (ranges according to intensity). Physical activities can be compared using a coefficient that measures the energy expenditure provided in relation to an expenditure at rest (sitting doing nothing), considered as a reference. An activity is considered light if the coefficient is lower than 3, moderate from 3 to 6 and sustained above 6. (institut, 2009, p. 11)

6-Beneficial effects of physical activity

Physical or sporting activities not only promote general well-being, they also contribute to the prevention of certain diseases or reduce their effects.

6-1- Fight against a sedentary lifestyle

Use of motorized means of transport and household appliances, reduction in manual tasks at work, success in sedentary leisure (television, computer, game consoles, etc.): the opportunities to practice physical activity are becoming rarer. Associated with changes in eating habits, this change in lifestyles has a clear impact on health.

A sedentary lifestyle is responsible for an increase in the risk of death from 1.2 to 2 for a sedentary person compared to an active person. Inactivity is a cardiovascular risk factor in itself and, associated with other factors, it promotes the onset of obesity.

In athletes, life expectancy is increased by an average of 6 years.

Sports practice in adults between the ages of 30 and 50 reduces the risk of death by 20%; this effect is even greater in seniors practicing from the age of 60 and up to 85, who then see this risk reduced by 50%. “Any part of the body that is not used and inactive is a source of disease, growth failure and premature aging. (institut, 2009, p. 58)

6-2-Effects on mental well-being

Fatigue and anxiety are two of the first reasons for medical consultation. Most often, they are due to a load or poorly supported working conditions. Sports activity allows you to regenerate your energy capital by acting on mental well-being: feeling of pleasure, increased self-esteem and also self-satisfaction linked to the improvement of body aesthetics. It promotes the positive feelings (joy, happiness, cheerfulness) often aroused by the conviviality of group sports practices and thereby improves relations with the social environment. Sports activity reduces stress. It also acts on depression, especially when the subjects are already under drug treatment. (national, 2008, p. 42)

6-3-Effects on dementia and Alzheimer's disease

The frequency of these diseases is constantly increasing due to the increase in life expectancy. For Alzheimer's disease, the number of new cases was multiplied by 3 between 2000 and 2006. Several categories of activities are effective in combating this type of mental illness: intellectual activities, group social activities and physical activities or sports. The latter act through complex mechanisms that still need to be clarified: improvement of cerebral oxygenation and stimulation of factors beneficial to the maintenance of intellectual functions.

Recent studies validate the protective effect against dementia and Alzheimer's disease of sports sessions at least twice a week, of moderate intensity and lasting 20 to 30 minutes each. The practice of activities is beneficial at any age, but it is better to start it as early as possible for optimal prevention. In addition, physical activity decreases the formation of clots which obstruct the vessels both in the

heart and in the brain (brain attack factors). The risk of anomaly of the vessels of the heart responsible for infarction is thus divided by 2 in the athlete.

Regular practice of moderate physical activity slows down the decline in cardiac capacity associated with aging and reduces the risk of sudden death from cardiovascular origin. (national, 2008, p. 78)

6-4- The role of physical activity in the prevention of cardiovascular diseases

Physical inactivity is an aggravating factor in cardiovascular disease (CVD) According to a report by the European Heart Network2, physical inactivity is now established as a major risk factor in the development of cardiovascular and cerebrovascular disease.

Inactive populations have about twice the risk of developing cardiovascular disease than active populations. A more active lifestyle, including in middle and old age, is associated with lower rates of death from cardiovascular disease. In addition, the relationship found between physical activity and CVD is continuous: the more active the person, the lower the risk. The greatest risk differences were found between completely sedentary people and those who are moderately active. Hence the need to adopt a less sedentary lifestyle.

The functioning of the cardiovascular system can be seriously disturbed by certain factors or diseases.

6-4-1-Some important cardiovascular risk factors:

high blood pressure, physical inactivity, diabetes, obesity, increased blood lipids. Their harmful consequences can affect the heart (its own vessels or its muscular wall) and/or the peripheral vessels (atherosclerosis). They are the leading cause of death and disability worldwide. (national, 2008, p. 61)

6-4-2- Physical activity makes it possible to fight against these factors by acting:

- on the heart: by increasing the efficiency of its contractions, hence improving its power and efficiency.
- on the vessels that irrigate the heart by increasing their number, their diameter and reducing the risk of spasms that can clog them.

Physical activity also decreases the amount of fat in the blood and increases “good” cholesterol. (weineck, 2004, p. 23)

6-4-3-Effects on high blood pressure

Hypertension promotes strokes by rupture of cerebral vessels. The preventive role of sports activity has been demonstrated in adolescents, the risk of presenting with arterial hypertension in adulthood is reduced. In the case of established arterial hypertension in adults, physical or sports activity is an essential therapeutic element since it makes it possible to reduce blood pressure and normalize blood pressure. A 12-week training program can significantly lower blood pressure levels and reduce the risk of cardiovascular events. (Luo, 2007, p. 88)

6-4-4- Effects on the pulmonary system

Sports training reduces shortness of breath on exertion and helps to fight against physical “detraining” due to asthma. In this case, regular sports activity can reduce the intensity of the attacks as well as the consumption of drugs used to fight against the bronchial repercussions of this disease. (éducation, 2011, p. 122)

6-4-5- Effects on cholesterol and other blood lipids

In excessive quantities in the blood, certain fats, such as cholesterol, are deposited along the walls of the arteries: this is atherosclerosis and its complications (heart, cerebral, renal and peripheral vascular damage, etc.).

Physical or sports activities practiced 1 to 2 hours a day, especially in endurance and "without forcing", reduce the level of blood lipids. (éducation, 2011, p. 78)

6-5- The role of physical activity in cancer prevention

Physical activity has an overall protective effect on certain cancers. However, physical activity plays a decisive role in the prevention of some of these cancers. Intense physical activity leads to a decrease in the frequency of occurrence of cancers. The greater the practice of physical activity, the lower the risk of developing cancer. The preventive effect of the activity is particularly true on: colon cancer and breast cancer.

6-5-1- colon cancer:

the mechanism of action would be based on the improvement of intestinal transit, which is facilitated, and on the reduction of the contact time of carcinogenic foods with the wall of the intestine. More than a dozen case-control and cohort studies have shown that regular physical activity is associated with a reduced risk of colon cancer. This reduction is around 60% when comparing subjects with significant physical activity with sedentary individuals.

6-5-2- breast cancer:

the reduction in the risk of occurrence of this cancer is all the more important as the intensity of the efforts made is high. The practice of 5 hours of weekly physical activity reduces the risk of breast cancer by 40% in active women compared to inactive women. When sports activity was practiced regularly during adolescence, the risk is reduced in adulthood provided that this practice is continued. The mechanism of action would be related to a modification of hormonal secretions.

Sports practice would also seem to reduce the frequency of occurrence of other cancers, such as those of the prostate or uterus. (éducation, 2011, p. 89)

6-6-The role of physical activity in the prevention of diabetes

Whether it is type I diabetes mellitus, requiring insulin, or type II fatty diabetes, often overweight, the regular practice of sports activities significantly reduces the risk of the disease occurring. In lean diabetes, the practice of physical activity makes it possible to reduce the doses of insulin necessary for treatment and also delays the complications due to this disease.

In pre-diabetic states, the practice of physical or sports activities seems more effective than medication in preventing progression to fatty diabetes.
In fatty diabetes with increased blood sugar levels, activity significantly reduces this figure. Several studies on the prevention of type 2 diabetes (non-insulin-dependent diabetes) now allow us to say that it is possible to prevent the appearance of this pathology in high-risk populations thanks to lifestyle and dietary measures. (modification of eating habits and reintroduction of physical exercise).

6-7- The role of physical activity in preventing weight gain

The WHO report highlights the link between regular physical activity and reduced risk of weight gain and obesity. Conversely, a sedentary lifestyle increases the risk of weight gain. In a large number of cross-sectional studies, a negative association has been found between the usual level of physical activity (or physical capacity) and indicators of obesity (Di-Pietro, 1995). Prospective studies, less numerous, make it possible to conclude that physical activity can attenuate weight gain over time, without however being at the origin of weight loss at the population level, whether in adults. or in children (Di-Pietro, 1999). In addition, regular physical activity induces a decrease in fat mass and reduces metabolic abnormalities in obese children.

Role of sedentary lifestyle:

In general, there is an apparent paradox between the constant increase in cases of obesity in recent years and the downward trend in total energy intake as well as lipid intake for the same period in many industrialized countries. (promotion, 2010, p. 122)
This phenomenon could be explained by a decrease in the level of physical activity in the populations concerned, and therefore by an increase in sedentary lifestyles. This is indeed the case since the expenditure of energy linked to physical activity has decreased in industrialized societies due to more comfortable living conditions (motorized transport, elevators, central heating, air conditioning) and sedentary leisure activities (television, video games, computer).
Some studies have shown that time spent watching television in childhood can be considered predictive of obesity in adolescence. A study provides an experimental demonstration of the relationship between time spent in front of the TV screen and increased body fat in children. Another intervention study this time observed a significant decrease in BMI, waist circumference and waist-to-hip ratio in children for whom TV and video time had been reduced compared to child witnesses. (promotion, 2010, p. 124)
Regardless of how the level of physical activity is estimated, there does appear to be an association between increasing cases of childhood obesity and trends towards increased sedentary behavior in populations. Moreover, when we examine the usual level of physical activity, food intake and changes in weight

over time, we find that weight change is negatively associated with the level of physical activity in the majority studies. This relationship was found most often for leisure physical activity and about as often in men as in women. (santé, 2002, p. 128)

There are about ten formulas to estimate its weight: Quetelet (BMI), Broca, Lorentz, ,… The Body Mass Index is widely used

BMI = Weight in kg / (Height x Height) in meters

Ex: 77 kg / (1.76x1.76) = 77/3.1 = 24.8 BMI

I M C classification according to WHO

Thinness <18.5

Normal 18.5 to 24.9

Overweight 25 to 29.9

Obesity > 30

Massive obesity > 40

Be careful, BMI is not the only risk indicator: waist circumference is another; Greater than 88 cm in women and 102 cm in men. (organisation, 2010, p. 29)

6-8- The role of physical activity in the prevention of the osteo-articular system

Among the environmental factors, physical activity is one of the essential elements for maintaining the integrity of the skeleton; it increases bone mineral density and is therefore associated with a reduction in risk factors for osteoporosis. Thus, physical activity can be decisive in the prevention or even the management of osteoporosis, reducing the risk of femoral neck fracture in women by up to 50%. (éducation, 2011, p. 122)

In children and adolescents, activities involving the weight-bearing joints, such as walking, dancing or running, are essential for bone development and can help to reduce bone loss. It is also a way to improve muscle strength and balance and reduce the risk of falls and therefore fractures. (national, 2008, p. 58)

6-8-1-On osteoarthritis (or premature joint ageing)

Moderate exercise does not increase the risk of developing osteoarthritis; on the contrary, it facilitates the nutrition of articular cartilage, an element of prevention of osteoarthritis and better joint mobility.

6-8-2- On osteoporosis Bone mass is built up during childhood and adolescence

The young athlete, if he combines sport with sufficient calcium intake, reaches a bone capital greater than that of the sedentary young person.

Beyond the age of 20, only the practice of sports activities makes it possible to maintain this bone capital and to fight against the appearance of osteoporosis and its consequences (fractures of the neck of the femur, for example). To be effective, sports must involve gravity, i.e. the standing position "in charge", as well as muscular work by repeated traction: bodybuilding, gymnastics, running

and, to a lesser extent , cycling. Full discharge sports, such as swimming, are ineffective in preventing osteoporosis. (éducation, 2011, p. 78)

6-8-3- On low back pain The muscles of the trunk

when they are trained by regular sports activities, provide good stability to the spine and thus participate in the prevention of low back pain and sciatica.

Be careful, the same muscular work is of course contraindicated in times of acute crisis.

6-8-4- On the muscles

Physical exercise increases strength and muscle tone, factors of good joint mobility, which is often reduced during aging.

Physical and sporting activities solicit the body. To obtain only beneficial effects, a good state of health, checked during a medical examination, is an essential condition for any practice. Your lifestyle and your motivation are also taken into account. Depending on the results of the examination, your motivations and your situation (age, history, professional and/or sports practice, etc.), the doctor decides on the need to carry out a resting electrocardiogram, a biological assessment, a test of exercise, an echocardiogram, a bone densitometry or other complementary examinations. (Bouvet, 2013, p. 44)

7- Advice and recommendations for physical activity

- The practical advice on the most suitable sports comes from this general screening examination for possible abnormalities. Medical opinions rarely lead to contraindications because physical and sporting activities are beneficial for health if they are adapted to each person's abilities.
- A sporting activity previously practiced is an important and favorable element because your technicality and your knowledge of physical effort allow a recovery without surprise. But beware, this sports history should not make you believe that you can resume this activity faster and more intensely than other people! The therapeutic management of a possible pathology must be done before any sports practice.
- Accidents due to the practice of physical and sporting activities are in 90% of cases of a cardiovascular nature. The medical examination is therefore mainly oriented towards the search for a cardiovascular risk or anomaly. Certain symptoms presented in everyday life or during physical exertion can point the doctor in the same direction:
    - abnormal shortness of breath at rest or on exertion, pain in the region of the heart, palpitations, malaise or fainting…
    - The doctor therefore endeavors to question you very precisely, to examine you, in particular to look for a heart or vascular murmur on auscultation.

- Choose suitable equipment: a pair of running sneakers, for example, is not recommended for gardening or mountain hiking. Each sport has its own equipment!

- Check the weather forecast: avoid unfavorable atmospheric conditions (rain or extreme temperatures) making certain sports practices risky.
- Protect yourself effectively (bicycle helmet, appropriate clothing, sunglasses, sunscreen, etc.).
- Drink and eat as soon as exercise exceeds 1 hour. … And above all, take advantage of the moments of conviviality provided by physical or sporting activities practiced in groups, with family, with colleagues or friends. (Agenc, 2001, p. 111)
- Increase fruit and vegetable consumption to reduce the number of low fruit and vegetable consumers by at least 25%14,
- Increase calcium consumption in order to reduce by 25% the population of subjects with calcium intakes below the recommended nutritional intakes15, while reducing the prevalence of vitamin D deficiencies by 25%,
- Reduce the average contribution of total lipid intake to less than 35% of daily energy intake, with a reduction of a quarter of the consumption of saturated fatty acids at the level of the population average (less than 35% of total fat intake),
- Increase the consumption of carbohydrates so that they contribute to more than 50% of daily energy intake, by promoting the consumption of foods that are sources of starch, by reducing the current consumption of simple sugars by 25%, and by increasing by 50% fiber consumption. (Rolland-Cachera, 2004, p. 84)
- Increase daily physical activity by improving by 25% the percentage of subjects doing, per day, the equivalent of at least 1/2 hour of brisk walking per day. Physical inactivity, being a risk factor for chronic diseases, must be combated in children. (Rolland, 2004, p. 60)
- A light consumer of fruits and vegetables is defined as consuming less than one and a half servings of fruit and less than two servings of vegetables (excluding potatoes) daily. In addition, certain population groups have specific nutritional needs. (santé, 2002, p. 128)

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