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PRESCRIBING PHYSICAL EXERCISE TO PATIENTS WITH HYPOKINETIC DISEASES

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Abstract: The world is currently being invaded by hypokinetic disease, which is spreading at an alarming rate. Many factors, including knowledge, attitude, socio-demographic characteristics, behavioral factors, and biomedical characteristics, could all play a role in hypercholesterolemia. As a result, research-based information on the prevalence, associated factors, and awareness of risk factors, prevention, and treatment of hypercholesterolemia is urgently required for its management. This research analytics being carried out on hypokinetic disease and the importance of exercise towards their prevention, management and treatments. In this paper, physical activity behavior change, promotion, and retention efforts are reviewed and critiqued. Emerging from this critical analysis is an understanding of the syndemic nature of hypokinetic diseases (i.e., the diseases associated with disuse and physical inactivity). The term syndemics is used to account for the interplay and synergistic nature of person, place, and timing in the development of disease. Not only are individual lifestyle behaviors and social factors considered in syndemics, but so too are the forces that link those causes together. Hypokinetic diseases by their nature are dangerous and cause slow death in individuals. As we grow older, we begin to realize that we are not immortal and that unhealthy lifestyles have cumulative negative effects which might be hypokinetic diseases or conditions. Examples studied like heart disease, low back pain, adult-onset diabetes, obesity and chronic diseases. Hypokinetic disease is a sedentary illness and can also be acquired through reckless lifestyles and genetic endowment. Physical activity participation has historically been conceptualized at the individual level with an emphasis on apparently healthy people. To genuinely affect change among the masses, those involved in delivering physical activity interventions and programming must not only address each lifestyle behavior and social affliction that contributes to hypokinetic diseases and some analytical recommendations being elaborated. This paper reviews recent studies on Hypo-Kinetic related stigma and medication adherence, including: summary of the empirical evidence linking stigma to adherence, discussion of proposed causal mechanisms of the stigma and adherence relationship, examination of studies that have empirically tested causal mechanisms, and methodological critique and directions for future research.

Index: - Physical Activity, Syndemics, Hypokinetic, Exercises Lifestyles, and Active Aging.

I. INTRODUCTION

Considering the theme, "Active Aging, Quality of Life, and Physical Activity as Medicine", and the "Exercise should be Medicine" initiative launched in the United States in 1996 [12]. This paper aims to critically reflect on where the discipline of kinesiology should offer suggestions about where it is going, with a keen interest in advancing inclusive physical activity practices. The complexities of physical-inactivity-related diseases are discussed, leading to recommendations for assuring the socio-cultural relevancy of the work that should be done, work that could be enhanced by employing community-based

participatory research methods. Physical fitness could be the ability of the body to function and work efficiently, which allows people to stay healthy while still being able to implement physical activity. Physical fitness refers to a set of aspects related to performing the activity Nieman, (2017) [11]. Physical fitness measures the body's ability to function efficiently and effectively during work and leisure activities to resist hypokinetic diseases and meet unexpected situations. An increase of damage to the inner surface of blood vessels may cause stroke when the blood supply to the brain drastically reduces. When the part of the body that is supposed to be controlled by the brain does not receive impulses as a result of insufficient oxygen to the brain, it will not move or function as required. As shown Figure [1], it is a disease in which plaque develops inside our arteries because of the accumulation of fat contents. It narrows the arteries and disrupts the flow of blood around the body, causing serious cardiovascular complications.

Figure [1]:- The HEART ACCTACK process and images of CARDIO-Vascular complications.

In Hypertension, the blood pressure in the arteries is elevated above the normality. Stroke is a medical condition that happens due to a lack of oxygen supply to the brain, and it is directly connected with health problems like high blood pressure, heart disorders, diabetes mellitus, lack of exercise, over body weight like Obesity. Stroke can be partial or complete stroke. Partial stroke may be temporal, while complete stroke involves no movement but comatose position. The onset of stroke may be immediate with consistent body signs (U.S. Department of Health and Human Services, 1998) [7]. According to Blair (2001) [5], the condition of stroke is a common cause of death and disability, especially in the elderly. The predisposing factors include: hypertension, atheroma, and cigarette smoking diabetes mellitus. Stroke occurs when a vascular disease suddenly interrupts flow of blood to the brain causing hypoxia. The effects include paralysis of a limb on one side of the body and disturbances of speech and vision. The nature and extent of cerebral impairment depends on the size and location of the affected blood vessels. The main causes are cerebral infraction (approximate 85%) and spontaneous intracranial hemorrhage (15%). Diabetes Mellitus (Diabetes) is a group of disorders that result when there is too much sugar in the blood. It occurs when the body does not make enough insulin or when the body is not able to use insulin effectively. Diabetes is the seventh leading cause of death among people over forty.

Hypo – means under or too little "not enough", **Kinetic** – means movement or activity.

Thus, hypokinetic means – too little activity. Hypokinetic diseases caused by insufficient physical activity, often in conjunction with inappropriate dietary practices. The term, coined by Acharya Balkrishna (2007) [1], can be used to describe many diseases and conditions associated with inactivity and poor fitness. An increase of damage to the inner surface of blood vessels may cause stroke, when the blood supply to the brain drastically reduces. When the part of the body that is supposed to be controlled by the brain did not receive impulses as a result of insufficient oxygen to the brain, it will not move or function as required. Stroke can be partial or complete stroke. Partial stroke may be temporal, while complete stroke involves no movement but comatose position. The onset of stroke may be immediate with consistent body signs (U.S. Department of Health and Human Services, (2005) [4]. Examples include: Heart Disease, Low back Pain, Type II Diabetes, and medical conditions are Artherosclerosis, Osleoporosis, Hypertension, and strokes. An epidemic of Hypokinetic disease is prevalent in our society today, such as obesity, coronary heart diseases, osteoporosis, and diabetes are related to inactive lifestyles; college students are showing early forms of hypokinetic diseases. Figure [2], showing the Osteoporosis is a condition where the DENSITY of the bone is decreased and the body fats gets increased. According to Center for the Diseases Prevention (2010) [6], the condition of stroke is a common cause of death and disability, especially in the elderly. Stroke occurs when a vascular disease suddenly interrupts flow of blood to the brain causing hypoxia. The effects include paralysis of a limb on one side of the body and disturbances of speech and vision.

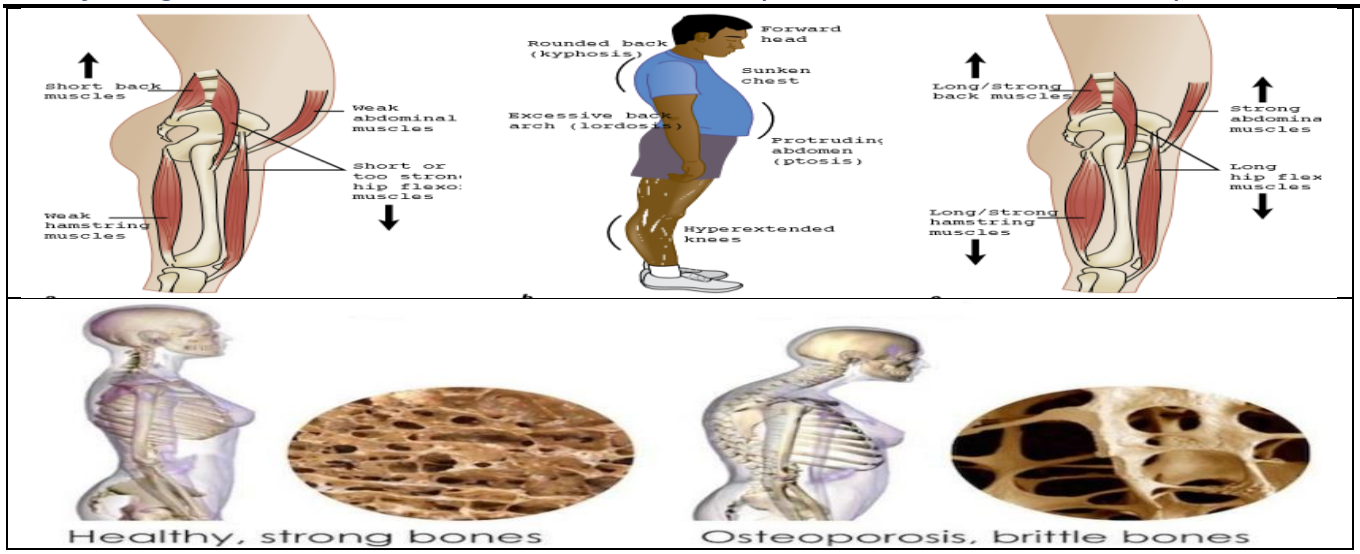

Figure [2]:- Osteoporosis is a condition where the DENSITY of the bone is decreased.

I. RESEARCH METHODOLOGY

To provide a safe and effective exercise prescription, we need more information about the specific hypokinetic diseases and conditions. Hypokinetic diseases are caused by a lack of physical activity, and encompass a wide range of conditions. We should specify the conditions (e.g., obesity, hypertension, type 2 diabetes) and provide details such as the individual's age, current fitness level, any existing medical conditions or limitations, and their goals. Once this information is provided, we could create a personalized exercise prescription as classification of exercise intensity is given in Table below [1].

Table [1]:- Classification of exercise intensity adapted Allender ***et. al***. (2008) [2].

INTENSITY	%HRR or %$VO_{2\ peak}$	% HR_{max}	% $VO_{2\ max}$	RPE	% 1-RM
Low intensity	< 30	< 57	< 37	< 9	< 30
	30–39	57–63	37–45	9–10	30–49
Moderate intensity	40–59	64–76	46–63	11–13	50–69
High intensity	60–89	77–95	64–90	14–17	70–84
	≥ 90	**≥ 96**	**≥ 91**	**≥ 18**	**≥ 85**

Abbreviations: 1-RM = one-repetition maximum; HRR = heart rate reserve; HR_{max} = maximum heart rate; RPE = rating of perceived exertion; VO_{2max} = maximum oxygen uptake; VO_{2peak} = peak oxygen uptake.

Overweight could be defined by using both the WHO criterion (body mass index [BMI] ≥ 25 kg/m^2) and the International Obesity Task Force criterion for Asians (BMI ≥ 23 kg/m^2). Obesity should be defined as BMI ≥ 30 kg/m^2, as recommended by WHO. There are mores in all academic disciplines, and kinesiology (also known as physical culture, physical training, physical education, exercise science, and sport science) is no exception. The idea that physical activity is important for the acquisition, maintenance, or restoration of health dates back centuries, 4^{th}. & 5^{th}., yet it was not until the 19th century that the discipline of kinesiology began to codify and it did so primarily under the leadership of medical doctors, Lee et.al (**2012**), [8] As it codified, certain traditions began to set in place, with the pendulum swinging within the degrees of freedom established by the early leaders in the discipline. Central obesity was defined as a waist circumference ≥ 90 cm for men and ≥ 80 cm for women, as recommended for South Asians by the International Diabetes Federation (REF), as shown in Figure [2]. The nature and extent of cerebral impairment depends on the size and location of the affected blood vessels. The main causes are cerebral infraction (approximate 85%) and spontaneous intracranial haemorrhage (15%), Anita (1996) [3]. Diabetes Mellitus (Diabetes) is a group of disorders that result when there is too much sugar in the blood. It occurs when the body does not make enough insulin or when the body is not able to use insulin effectively. Diabetes is the seventh leading cause of death among people over forty. Hypokinetic diseases or condition include heart disease, hypertension, cancer, stroke, diabetes, low back pain and obesity etc. 1. Heart Disease: Heart diseases are classified as cardiovascular diseases. The many types of cardiovascular diseases are the leading killers in automated societies and there are many forms of cardiovascular disease (**CVD**). India has one of the highest burdens of cardiovascular disease (CVD) in the world. CVD is the leading cause of death and disability in India, and the number of deaths from CVD is projected to increase. Insulin resistance, a common issue in obesity, is a

reduced response to insulin in target tissues such as muscle and liver tissue. This can lead to metabolic syndrome and hypokinetic diseases, which are known to increase the risk of metabolic cardiovascular diseases and associated morbidity and mortality. Dysfunctional adipose tissue is also a concern in obesity, as it can lead to pro-inflammatory processes and an increase in adi-pocytokines such as adi-ponectin and pro-inflammatory tumor necrosis factor-α (TNF-α). Health Fitness like body composition, cardio respiratory endurance, flexibility, muscular endurance & strength. Performance or related fitness, like Agility, Balance, Coordination, Power, Reaction Time and Speed as shown in Figure [3], exercise as a prescription for patients with various diseases.

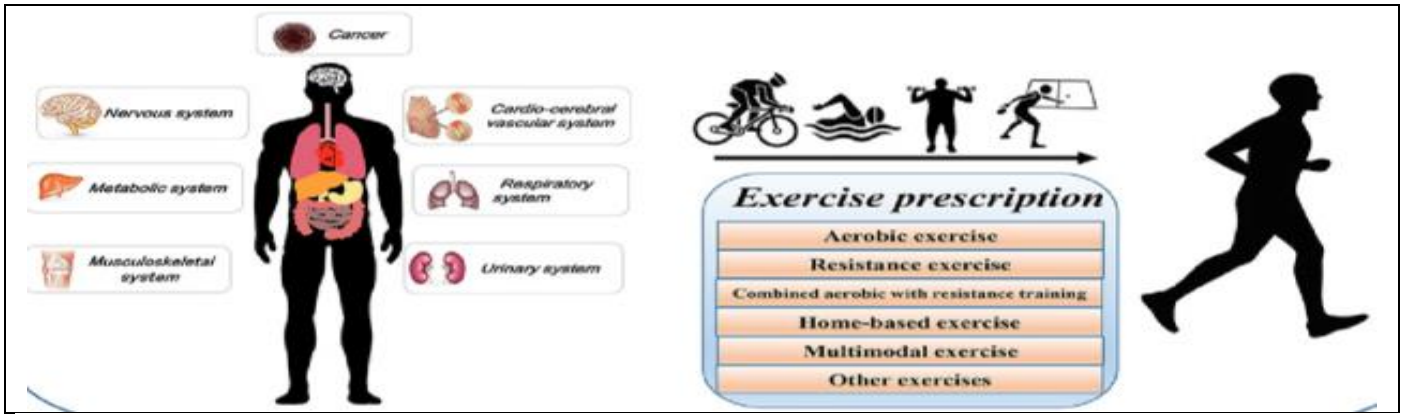

Figure [3]:- Exercise as a Prescription for Patients with Various Diseases.

The term hypertension is used to describe blood pressure that is sustained at a higher than the generally accepted normal maximum level for a particular age group e.g.: at 20 years 140/90 mmHg, at 50 years 160/95 mmHg, at 75 years 170 / 105mmHg. Hypertension is described as essential (primary, idiopathic) or secondary to other diseases. Irrespective of the cause, hypertension commonly affects the kidneys.

PREVALENCE: CVD risk factors are prevalent in India, even at young ages, and are rising rapidly. Some are classified as coronary heart disease (**CHD**) because they affect the heart muscle and the blood vessels inside the heart. Coronary occlusion (heart attack) is a type of **CHD**. Angina pectoris (chest arm pain), which occurs when the oxygen supply to the heart muscle is diminished, is sometimes considered to be a type of **CHD**, though it is really a symptom of poor circulation. Hypertension (high blood pressure), stroke (brain attack), peripheral vascular disease, and congestive heart failure are other forms of **CVD**. In rural areas, coronary heart disease prevalence rates range from 1.6% to 7.4%, while in urban areas they range from 1% to 13.2%.

STRATEGIES TO PREVENT HYPOKINETIC

- Promoting HEALTH Education and Awareness
- Discouraging smoking and tobacco use
- Eating a healthy diet and exercising regularly
- Reducing high fat dairy, CARBOHYDRATES, and SATURATED fats
- Increasing daily intake of fruit and vegetables
- Screening tests at an early age

In the India, CHD accounts for approximately 37 percent of all premature deaths. Stroke accounts for an additional 9 percent, and men are likely to suffer from heart disease than women. According to 1998 estimates as reported by Heart. Figure [4]:- Different exercise as a Prescription for Patients with Diseases. Hypertension or High Blood Pressure (HBP): Hypertension, or elevated blood pressure is one of the most prevalent chronic diseases in the United States. Simply defined, hypertension is a chronically elevated blood pressure greater than 140 / 90 mmHg.

Figure [4]:- Different exercise as a Prescription for Patients with Diseases.

Hypertension is a serious medical problem if left untreated, and individuals with it have three to four times the risk of developing coronary artery disease, and up to seven times the risk of having a stroke (White et. Al. (2016) **[10].** The detrimental effects of hypertension are on the heart, brain and kidneys. The heart must work harder (by generating more pressure) to pump blood around the body. This increases the heart's demand for oxygen and, if atherosclerosis is present, may cause insufficient blood flow (ischemia) or induce angina. An increase of damage to the inner surface of blood vessels may cause stroke, when the blood supply to the brain drastically reduces. When the part of the body that is supposed to be controlled by the brain did not receive impulses as a result of insufficient oxygen to the brain, it will not move or function as required.

Table [2]:- Regular exercises improves the physical fitness of individual and thereby improves the resistance capacity to prevent diseases.

Rating	Score
Healthy back	11-12
Average risk	9-10
Above average risk	6-8
High risk	<6

Exercise	Repetitions
Side Stretch	15 within 2 min
Jump Rope	60 jumps/min for 2 min
Curl-Up	5-10 within 2 min
Bench Step	50 within 2 min
Inchworm	5-15 within 2 min
Sprint the Line	6 within 2 min
Knee Lift	5 on each leg within 2 min
Jog in Place	120 steps/min for 2 min

	13 YEARS OLD		14 YEARS OLD		15 YEARS OLD		16 YEARS OLD		17 YEARS OLD		18 YEARS OLD	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
High performance	16.6-19.9	17.5-21.0	17.5-20.9	17.5-21.5	18.1-21.5	17.5-21.5	18.5-22.0	17.5-21.5	18.8-21.9	17.5-21.5	19.0-22.4	18.0-21.9
Good fitness	20.0-23.0	21.1-24.5	21.0-24.5	21.6-25.0	21.6-25.0	21.6-25.0	22.1-26.5	21.6-25.0	22.0-27.0	21.6-26.0	22.5-27.5	22.0-27.3
Marginal fitness	23.1-26.0	24.6-27.0	24.6-26.5	25.1-27.5	25.1-27.0	25.1-27.5	26.6-27.5	25.1-27.5	27.1-28.0	26.1-27.5	27.6-28.5	27.4-28.0
Low fitness	26.1+	27+	26.6+	27.6+	27.1+	27.6+	27.6+	27.6+	28.1+	27.6+	28.6+	28.1+

Aerobic types of exercise modalities help to increases energy expenditure, as shown in above Table [2]. Exercise also helps to reduce the risk factor of illnesses like obesity, stroke, etc. Exercise control the body weight and it builds and maintains strong and healthy bones and muscles

Table [3]:- Classification of exercise intensity adapted Ministry of Ayush. (**2025**) **[9]**.

Recommendations for Type 1 Diabetes	**Recommendations for Type 2 Diabetes**
TYPE: Aerobic walking, cycling, stair-climbing, cross- country skiing. Strength training: circuit programmes using light weight with 10 – 15 repetitions. **INTENSITY:**50 – 85% heart rate reserve or 50 – 85% Vozmax **DURATION:** 20 – 60 min plus 5 – 10min warm – up and cool-down period **FREQUENCY:** Daily to ensure optimal blood glucose control.	**TYPE**: Aerobic: walking, jogging, cycling, stair climbing, cross- country skiing etc. Strength (moderate level resistance training): circuit programme using light weights with 10 – 15 repetitions. **INTENSITY:** 50 – 85% heart rate reserve or 50 – 85% Vozmax **DURATION:** 20 – 60min plus 5 – 10min warm – up and cool – down period. **FREQUENCY:** 3 – 5 times per week daily if on insulin therapy.

Individuals with diabetes mellitus should participate in regular physical activity and preferably perform exercise training as follows: do not inject insulin into the muscle groups to be exercised, check blood glucose regularly, and always carry a rapid – acting (simple carbohydrates) food to correct hypoglycemia.

IV. RESULTS AND DISCUSSION

Moreover, those who actively transport to and from work vis-à-vis biking or walking – which generally corresponds with these same regions – are least likely to have diabetes, hypertension, and obesity and most likely to meet the recommended guidelines for physical activity. Affluence, ethnicity, and race are

important moderators in many of these relationships, as are other factors such as age, disability, gender, immigration status, location (e.g., rural vs. urban), and sexual orientation.

Table [4]:- Classification of Blood Pressure for Adults Category

Blood Pressure for an Adult	Systolic Blood Pressure (mmHg)	Diastolic Blood
Goal	**< 120**	**< 80**
Normal	**< 130**	**< 85**
High Normal	**130 – 139**	**85 – 89**
Stage 1 Hypertension	**140 – 159**	**90 – 99**
Stage 2 Hypertension	**160 – 179**	**100 – 109**
Stage 3 Hypertension	**≥ 180**	**≥ 110**

Pre-hypertension could be defined as a systolic blood pressure of 120 to 139 mm Hg or diastolic blood pressure of 80 to 89 mm Hg. Hypertension could be defined as a systolic blood pressure of ≥ 140 mm Hg, a diastolic pressure of ≥ 90 mm Hg, or being on drug treatment for hypertension, classification of Blood Pressure for Adults Category are as shown in Table [4]. . Metabolic syndrome could be defined by the presence of central obesity and at least 2 of the following:

- **Triglycerides** ≥ 150 mg/dl (or drug therapy for lipids)
- **HDL Cholesterol**< 40 mg/dl for men and < 50 mg/dl for women
- **Blood PRESSURE ≥** 130/85 mm Hg (or drug therapy for hypertension)
- **Fasting plasma glucose concentration ≥** 100 mg/dl, per the International Diabetes Federation
- **Diabetes Mellitus** could be defined as a fasting plasma glucose concentration ≥ 126 mg/dl (7.0 mmol/l) or 120-min concentration of ≥ 200 mg/dl (11.1 mmol/l)
- **Impaired Glucose Tolerance** (**IGT**) could be defined as fasting glucose ≥ 110 mg/dl (6.1 mmol/l) or 120-min concentration of ≥ 140 mg/dl dl (7.8 mmol/l) in some patients without diabetes
- **Alcohol Consumption** should be recorded as the frequency of intake and quantity of spirits, beer, and wine per week. These data could be converted into units of alcohol (1 U = 25 ml of spirits, 282 ml of beer or 125 ml of wine) and categorized as none, <7U, 7 to 14 U, and > 14 U/week
- **Tobacco** (smoking & non-smoking) use could be defined as never, past & present users,

CONCLUSIONS and RECOMMENDATIONS

Individuals with hypertension should be instructed to move slowly when transitioning from the floor to standing because they are more susceptible to orthostatic hypotension, especially if they are taking an antihypertensive medication. Importantly, both hypertensive and hypotensive responses are possible during and after exercise for individuals with hypertension. Some patients intensities may need to be monitored by the RDE (Rating of Perceived Exertion), scale because some blood pressure modification can alter the accuracy of training health rates during exercise. Low weight resistance training should be used as a supplement to endurance training, not as the primary exercise. Finally, exercise mode; like endurance activities, such as walking, running, cycling, swimming and so on, with 50% to 60 % of intensity, and then gradually increasing to 65% to 70% Vozmax, with frequency of 4 to 5 days/ week as shown in Figure [5]. It can be deduced from this paper that people who do regular physical activity can reduce their risk of death, regardless of the cause and that active people increase their life expectancy by two years compared to those who are inactive. It was also established that sedentary people experience a 20 percent to two-fold increase in early death compared to active people. Physical activity is also seen to be associated with better and more restful sleep.

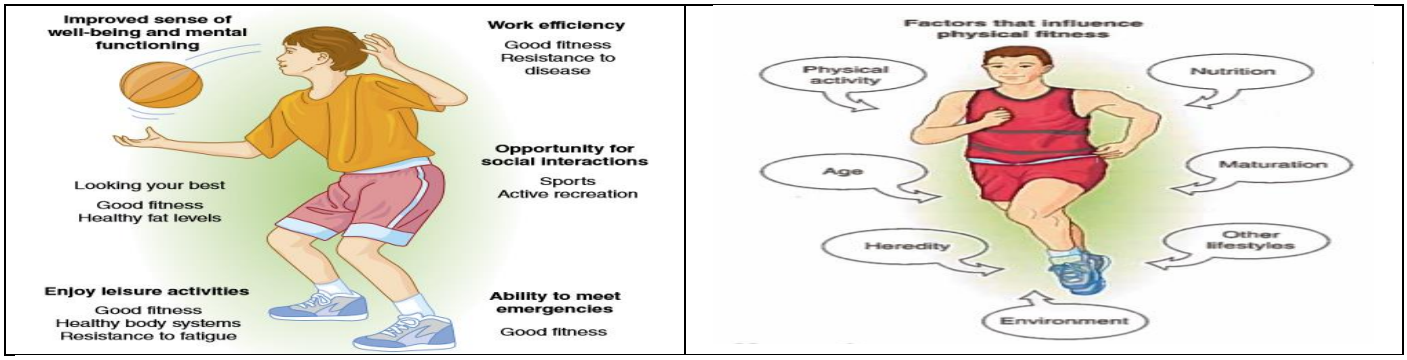

Figure [5]:- physical activity such as facilities and building should be provided.

According to lots of research findings, exercise has assisted in the prevention, management and treatment of hypokinetic diseases. The prescribed exercises are seriously participated in, casualty and deaths from hypokinetic diseases could be reduced. Exercise helps to increase energy expenditure, especially for individuals who expended relatively moderate levels of energy (>1,000 Kcal / wk). Drugs can be used in the prevention, management and treatment of hypokinetic diseases, but exercise done on a regular basis can equally be used in the prevention, management and treatment of hypokinetic diseases without much cost when compared to huge sums of money spent on expensive drugs, and tests. Exercise done on a regular basis according to research reports had helped to prevent, manage and treat hypokinetic diseases. Electronic media has played a major role in extending the reach of YOG to each and every household. Today, National and international channels are telecasting over eight hours of Alternative therapeutically exercises, people are able to see and experience the benefits of Yog Sciences programmes on the daily basis.

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