

## PAPER ON FITNESS – NUTRITION - HYGIENE

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**Physical fitness** is a general state of health and well-being and, more specifically, the ability to perform aspects of sports or occupations. Physical fitness is generally achieved through correct nutrition, moderate-vigorous physical activity, exercise and rest. Before the industrial revolution, *fitness* was the capacity to carry out the day's activities without undue fatigue. however with changing lifestyles fitness is termed as the ability of a person to adapt various situations and condition to resist diseases.

Specific or task-oriented fitness is a person's ability to perform in a specific activity with a reasonable efficiency: for example, sports or military service. Specific training

prepares athletes to perform well in their sports. In this called training

Mainly there are two types of training procedures –high intensity interval training(HIIT) and cardio-vascular training.

**HIIT: High Intensity Interval Training** consists of repeated, short bursts of exercise, completed at a high level of intensity. These sets of intense activity are followed by a predetermined time of rest or low intensity activity. Studies have shown that exercising at a higher intensity has increased cardiac benefits for humans, compared to when exercising at a low or moderate level. Research into the benefits of HIIT have revealed that it can be very successful for reducing fat, especially around the abdominal region.

EXAMPLES:

**100 m sprint:** in a sprint the athlete must be trained to work anaerobically throughout the race, an example of how to do this would be interval training

**Sand running:** creates less strain on leg muscles than running on

grass or concrete. This is due to the fact that sand collapses beneath your foot softening the landing. Sand training is an effective way to lose weight and become fit as its proven you need more effort (1 and a half times more) to run on the soft sand than on a hard surface

- **Water jogging:** is a form of exercise that decreases strain on joints and bones. The water supplies minimal impact to muscles and bones which is good for those recovering from injury. Furthermore, the resistance of the water as you jog through it provides an enhanced effect of exercise (The deeper you are the greater the force needed to pull your leg through).

Cardiovascular training:

Cardiovascular capacity can be measured using VO<sub>2</sub> max, a measure of the amount of oxygen the body can uptake and utilize. Cardio respiratory training involves movement that increases the heart rate to improve the body's oxygen consumption. This form of exercise is an important part of all training regiments ranging from professional athletes to the

everyday person. Also, it helps increase stamina.

Examples:

- **Jogging –** Running at a steady and gentle pace. This form of exercise is great for maintaining weight.

**Walking –** Moving at a fairly regular pace for a short, medium or long distance. Many walkers enjoy getting their workouts in at their local mall.

- **Swimming:** This is a good full body exercise for those who are looking to strengthen their core while improving cardiovascular endurance.
- **Biking –** This is another low stress exercise on the joints and is great for improving leg strength.

EFFECTS:

**Controls blood pressure:**

Through regular physical fitness, the heart does not have to work as hard to create a rise in blood pressure, which lowers the force on the arteries, and lowers the overall blood pressure

Exercise, as part of lifestyle modification, is known to be the first line of therapy for patients

with type 2 diabetes and dating back as far as 1000 AD, Greek physicians prescribed exercise as a way to improve health (2). Regular exercise provides many physiological and psychological benefits, including improvements in glycemic control (in most individuals), insulin sensitivity, blood pressure, lipid profile, muscular strength, and bone mineral density

Developing research has demonstrated that many of the benefits of exercise are mediated through the role of skeletal muscle as an endocrine organ. That is, contracting muscles release multiple substances known as myokines which promote the growth of new tissue, tissue repair, and various anti-inflammatory functions, which in turn reduce the risk of developing various inflammatory diseases.

#### NUTRITION:

**Human nutrition** refers to the provision of essential nutrients necessary to support human life and health. Generally, people can survive up to 40 days without food, a period largely depending on the amount of

water consumed, stored body fat, muscle mass and genetic factors

The human body contains chemical compounds, such as water, carbohydrates (sugar, starch, and fiber), amino acids (in proteins), fatty acids (in lipids), and nucleic acids (DNA and RNA). These compounds consist of elements such as carbon, hydrogen, oxygen, nitrogen, phosphorus, calcium, iron, zinc, magnesium, manganese, and so on. All the chemical compounds and elements contained in the human body occur in various forms and combinations such as hormones, vitamins, phospholipids and hydroxyapatite. These compounds are found in the human body and in the different types of organisms that humans eat.

#### NUTRIENTS:

The seven major classes of nutrients are: carbohydrates, fats, fiber, minerals, proteins, vitamins, and water. These nutrient classes are categorized as either macronutrients (needed in relatively large amounts)

or micronutrients (needed in smaller quantities). The macronutrients are carbohydrates, fats, fiber, proteins, and water. The micronutrients are minerals and vitamins.

There are many divisions and many more uses of each and every nutrient. But only few major uses were stated here.

Carbohydrates:

Use: providing energy and regulating blood glucose. Obtained in grains

Fats:

Use: as a source of heat and energy in body, as a padding and insulation for the organs and nerves obtained in ghee, butter etc

Fiber: Fiber is a type of carbohydrate that the body can't digest. Though most carbohydrates are broken down into sugar molecules, fiber cannot be broken down into sugar molecules, and instead it passes through the body undigested. Fiber helps regulate the body's use of sugars, helping to keep hunger and blood sugar in check.

Obtained in all fruits and vegetables.

Water as a nutrient: major functions were:

Cell life-chemical and metabolic reactions-transport of nutrients-body temperature regulation-elimination of waste.

Mal nutrition and global nutrition challenges:

**Malnutrition or malnourishment** is a condition that results from eating a diet in which nutrients are either not enough or are too much such that the diet causes health problems. It may involve calories, protein, carbohydrates, vitamins or minerals. Not enough nutrients is called under nutrition or undernourishment while too much is called over nutrition.

Malnutrition is often used specifically to refer to under nutrition where there is not enough calories, protein, or micronutrients. If under nutrition occurs during pregnancy, or before two years of age, it may result in permanent problems with physical and mental development. Extreme undernourishment, known as starvation, may have symptoms that include: a short height, thin body, very poor energy levels, and

swollen legs and abdomen. People also often get infections and are frequently cold. The symptoms of micronutrient deficiencies depend on the micronutrient that is lacking.

Global nutrition challenges:

The challenges facing global nutrition are disease, child malnutrition, obesity, and vitamin deficiency.

Cardio vascular diseases, various cancers, diabetes, and chronic respiratory problems, all of which are linked to poor nutrition.

Childhood malnutrition is common and contributes to the global burden of disease.<sup>1</sup> Childhood is a particularly important time to achieve good nutrition status, because poor nutrition has the capability to lock a child in a vicious cycle of disease susceptibility and recurring sickness, which threatens cognitive and social development.

Vitamins and minerals are essential to the proper functioning and maintenance of the human body.

Globally, particularly in developing nations, deficiencies in Iodine, Iron and Zinc among others are said to have negative impacts on human health when these minerals are not ingested in an adequate quantity.

How to stop malnutrition?

1. Individual monitoring of nutrition
2. Societal help as funds for nutrition of poor
3. Government responsible actions to stop malnutrition through development aids like low cost rice, vegetables to poor programs etc.

**HYGIENE:**

**Hygiene** refers to conditions and practices that help to maintain health and prevent the spread of diseases.

**Medical hygiene:**

Medical hygiene pertains to the hygiene practices related to the administration of medicine, and medical care, that prevents or minimizes disease and the spreading of disease.

- Isolation or quarantine of infectious persons or materials to prevent spread of infection.
- Sterilization of instruments used in surgical procedures.
- Use of protective clothing and barriers, such as masks, gowns, caps, eyewear and gloves.

- Proper bandaging and dressing of injuries.
- Safe disposal of medical waste.
- Disinfection of reusables (i.e. linen, pads, uniforms)
- Scrubbing up, hand-washing, especially in an operating room, but in more general health-care settings as well, where diseases can be transmitted.
- Using a process or product that inactivates the pathogens in situ. Germ kill is achieved using a "micro-biocidal" product i.e. a disinfectant or antibacterial product or waterless hand sanitizer, or by application of heat.
- In some cases combined germ removal with kill is used, e.g. laundering of clothing and household linens such as towels and bed linen.

#### Home and Body hygiene:

Good home hygiene means targeting hygiene procedures at critical points, at appropriate times, to break the chain of infection i.e. to eliminate germs before they can spread further.<sup>[3]</sup> Because the "infectious dose" for some pathogens can be very small (10-100 viable units, or even less for some viruses), and infection can result from direct transfer from surfaces via hands or food to the mouth, nasal mucosa or the eye, 'hygienic cleaning' procedures should be sufficient to eliminate pathogens from critical surfaces. Hygienic cleaning can be done by:

- Mechanical removal (i.e. cleaning) using a soap or detergent. To be effective as a hygiene measure, this process must be followed by thorough rinsing under running water to remove germs from the surface.

Cleaning of toilets and hand wash facilities is important to prevent odors and make them socially acceptable. Social acceptance is an important part of encouraging people to use toilets and wash their hands.

Drinking water need to be kept hygiene to stop infections. Chlorination – boiling – filtration need to be done.

#### Excessive body hygiene:

Excessive body hygiene (obsessive compulsive disorder) is a psychological disease for over hygiene. People with this disorder do repetitive checkings even for their daily rituals, they will be germophobic and they cannot let things go.

OCD sometimes runs in families, but no one knows for sure why some people have it while others don't. Researchers have found that several parts of the brain are involved in fear and anxiety. By learning more about fear and anxiety in the brain, scientists may be able to create better treatments. Researchers are also looking for ways in which stress and environmental factors may play a role.

The reason for this topic to be mentioned here is one should not be driven by over hygienic activities as they can cause trouble in daily life.

#### REFERENCES:

Mackenzie. B (2001) – middle distance running .

Melina , R (2010) , physical activity and health of youth

Liberson A D (2004) “how long can a person survive without food “

Lean , Michael E.J (2015) “principles of human nutrition”

International scientific forum on human hygiene

OCD-anonymous article.