YOGA, HEALTH AND PHYSICAL EDUCATION

UNIT – I: YOGA AND ASANAS

Meaning and Concept of Yoga

The term 'Yoga' is derived from the Sanskrit verb 'YUJ' meaning 'to join' or 'to yoke' or 'to unite' or 'to integrate' which means total integration of the physical, mental, intellectual and spiritual aspects of human personality.

"Yoga is the unification of the individual psyche (Jivatma) with the transcendental (Paramatman)" -Yoga Yajnavalkya.

Jesus Christ says "the physical body (the Stula Sharir) is the living temple of the God".

"Blessed are the pure in heart, for they shall see God"- says Christ.

Patanjali defines yoga as complete suppression of all mental modes or process (Cittaorttinivodha).

Vyasa defines yoga as absorptive concentration (samadhi). It is a universal attribute of the mind. All persons can attain yoga by repeated practice (abhyasa) and detachment (vairagya).

Swami Sathyananda Saraswati (1999) in his book, "Asana Pranayama Mudhra Bandha", comments that yoga is not an ancient myth buried in oblivion. It is the most valuable inheritance of the present. It is the essential need of today and the culture of tomorrow.

Hassanagas (1996) concluded that

- Practicing yoga helps in improving the general health of the volunteers.
- The psycho- condition is reinforced and the mental capabilities are increased. The concentration and memory are developed. Self-confidence, self-discipline and working capabilities are increased.
- The capability for removing the psycho-physical fatigue is increased.
- The number of injuries is decreased as a result of increase of the self-consciousness, self-control of the body and brain.
- The number of absences due to illness is decreased.

- The efficiency and the productivity increases leading to profits.

Nedungode V. Haridas (1996) in his article, "Physiological and Philosophical aspects of Yoga" states that "Yoga science is a well-proven treasure and it is up to us to tap the yoga power to relax and rejuvenate our mind, increase our physical strength, expand our spiritual awareness, improve our concentration, help our body to use oxygen and nutrients more effectively and to prevent illness and retard old-age".

Hemalatha Murthy (1996) in her article, "Management of Respiratory Diseases by Yoga" states that yoga gives us solace, confidence, redeems all our miseries, obsession and conflicts. It is suitable to all and all times. It helps the persons to change their attitudes and bring a tremendous change in way of life, which is simple and which is very necessary, unless, there is no true solution to all the problems and illness. Right knowledge of yoga burns out the likes and dislikes, ego and ignorance and there is an establishment of pure bliss, which is natural state of a being.

Manchanda (2001) conducted a Research study of Reversal of Coronary Heart Disease through Prekasha

Meditation with Reference to Coronary Atherosclerosis Reversal Potential of Yoga Life Style

Intervention among 42 male patients. The results of the study, reveals that, in the yoga group, 3 (5%) Lesions showed progression, 46 (75%) Lesions showed no change while 12 (20%) lesions showed regression. In the control group 22 (37%) lesions showed progression, 36 (61%) showed no change while 1 (2%) showed regression. Yoga lifestyle intervention is beneficial in improving the symptoms and exercise capacity, lowering weight and serum lipid levels. It also retards the progression of coronary atherosclerosis in patients with sure coronary artery diseases and reduces revascularization procedures.

Origin and History of Development of Yoga

Yoga means the classical Yoga system as set forth by Patañjali in the Yoga Sūtras. Patañjali taught an eightfold (aṣṣāṣga) system of Yoga emphasizing an integral spiritual development including ethical disciplines (Yama and Niyama), postures (Āsana), controlling and harmonizing the breath (Prāṇāyāma), control of the senses (Pratyāhāra), concentration (Dhāraṇā), meditation (Dhyāna) and absorption (Samādhi). This constitutes a complete and integral system of spiritual training.

However, classical Yoga was part of the Vedic tradition. Patañjali was only a compiler of the teachings at a later period. Yogic teachings covering all aspects of Patañjali Yoga are common in literature prior to Patañjali like in the Purāṣas, the Mahābhārata and the Upaniṣads. The instigator of the Yoga system is said to be Hiraṣyagarbha, who represent the creative and evolutionary force of the universe.

Yoga can be traced back to the ṣgveda itself, the oldest vedik text which speaks about yoking our mind and insight to the light of Truth or Reality. Great teachers of early Yoga include the names of many famous Vedic sages like Vasiṣṣha, Yajñavalkya, and Jaigiśavya. The greatest of the Yogis is always said to be Yogeśvara Krishna himself, the propounder of Bhagavadgītā, which is called as Yoga Śāstra – an authoritative work on Yoga.

Origin of Yoga and the Indus Valley Civilization

The stone seals excavated from the sites of the Indus Valley Civilization (3000 B.C.) depicting figures in yogic postures indicate that Yoga was being practised even during 3000 B.C.

The first indication of body-culture in Yoga is to be traced through the word Āsana (posture) and Prāṣāyāma (the regulation, conservation and control of bio-energy). But since, we are concerned primarily with postures, let us go to its origin. This involves not only how posture training came to be regarded as a physical requisite for Yoga but also how its later development aided the most comprehensive evolution of namely physical training, hygiene, social medicine, and therapeutics.

In the evolution of Āsana and its synthesis, besides the original prayer and meditative poses, certain other postures have also been included which have been found to be definitely useful in the development of the physical and meditative aspects of the individual's personality. A series of dynamic variations has been added to the static Āsanas to enlarge the scope of application and meet the varied requirements.

Yoga has been part of man's activities directed towards higher spiritual achievements in India. The history of Yoga is divided into five categories:

- Vedic period
- Pre-classical period
- Classical period
- Yoga in Medieval Times
- Yoga in Modern Times

Psychological aspects leading to origin of Yoga

There are some psychological reasons which contributed to the origin of Yoga. These reasons could be attributed to:

1. Desire for Sukha-pravritti (attainment of happiness) and Dukha-nivritti (termination of sorrow and misery) and
2. Curiosity to know about self and the realities of life.

There was a realization that suffering, misery, frustration and the consequent pain were permanent in life, while the enjoyment, if any, was a temporary feature. This realization led the philosophers to gain knowledge about the nature, type and cause of suffering and pain, and also to find out ways that could end them and help in attaining permanent happiness and bliss in life. Consequently, Yoga originated and evolved as a way/means to overcome the pain the suffering and attain permanent bliss in life. Thus, the existence of pain, suffering, misery etc. in life was major psychological reason which helped in the origin of Yoga. Yoga says that suffering is inevitable as long as you are in the state of Avidya (ignorance). There are three kinds of suffering (Tapatrayas) which are categorized in the Saṣkhya Karikā.

1. Physical suffering or **Ādi-Bhautika Tapa** which is manifested in physical body and can be caused by troubles/obstacles coming from the external world, such as from wild animals, people, infections etc.
2. Divine or **Ādi-Daivika Tapa** is the suffering caused by coming from extra-sensory world/divine power, natural calamities like earthquake, flood, planet position (grahamandal prabhava) etc.
3. Internal or **Ādhyātmika Tapa** is the trouble/obstacle arising out of one's own body and mind, such as loneliness, depression, stress-related disorders etc.

Vedic period

The ancient texts of Vedas are the oldest scriptures in the world. The Sanskrit word Veda means "knowledge" and ṇk means "praise". Thus the ṣgveda is a collection of hymns that are in praise of a higher power. Other three Vedas are Yajur Veda (knowledge of Yajña), Sāma Veda (Knowledge of chants), and Atharva Veda (knowledge of Atharva). In Vedic period the means to higher attainment were through Knowledge or revelation from the Universe through meditation. It comprises three Yogas – Mantra Yoga, where the power of mantra, through which the mantra becomes active as a tool of transformation in the mind, Prāṣa Yoga – through Prāṣāyāma which energizes the vital force. Dhyāna Yoga – The word dhī', which means Buddhi or intellect is the root for the term 'dhyāna' or meditation.
Dhī is the higher and interior portion of the mind (manas), which enables us to perceive the eternal truth.

This cultivation of dhī or buddhi, the main faculty of discrimination, is the main characteristic of Yoga, Vedanta and Buddhism.

To keep the mind solely on one object is contemplation. "Contemplation is that state in which the tendencies of the concentrated mind begin to flow around one single notion like an uninterrupted stream of oil, and the mental faculties (manas) remain without any outward object." The five characteristics of Dhyāna

are: single thought, effortlessness, slowness, wakefulness, effortless expansion. Any state of mind having these five characteristics can be said to be in Dhyāna.

In the Maitrāyanī Upaniṣad; Yoga is spoken about as: ṣaṣanga-Yoga – The unitingdiscipline of the six limbs (ṇad-aṇga), as expounded in the Maitrāyanī-Upaniṣad: (1) breath control (prāṇāyāma), (2) withdrawal of senses (pratyāhāra), (3) meditation (dhyāna), (4) concentration (dharaṇā), (5) recalling and examination (tarka), and (6) transcendental state (samādhi). Yoga is the state in which all our Indriyas are beheld steadily i.e., a state of mastery over senses and mind, as portrayed in Kaṣhopaniṣad.

Pre-classical period

One of the most outstanding Yoga scriptures is the Bhagavad-Gītā. According to the Bhagavadgītā, there are three important paths which lead to establishing relationship with the Supreme. These have been designated as the Yoga of perfect actions (Karma Yoga), the Yoga of perfect devotion (Bhakti Yoga) the Yoga of perfect knowledge (Jñāna Yoga).

The Bhagavadgītā consists of 18 chapters. Each chapter is called a Yoga. Each chapter is a highly specialized Yoga revealing the path of attaining realization of the Ultimate Truth. Bhagavadgītā gives specific knowledge regarding the purpose of human existence, the immortality of the soul and our eternal relationship with the Supreme. This knowledge applies to each and every one of us without exception.

Classical period

During the classical period which is around 2nd century BCE Patañjali, wrote Yoga Sūtra which comprised 196 aphorisms which describes the eight limbs (Aṇṇāṇga) to reach the goal of human life which is freedom from miseries of death and birth. This is known as the Yoga of will power or Rāja Yoga or Aṣṣāṣga Yoga.

Buddha was also contemporary to this period who taught us eight-fold path āryaaṇṇāṇga- mārga emphasising on meditation.

Vipāsanā is one of India's most ancient meditation techniques. Long lost to humanity, it was revived by Gautama, the Buddha more than 2500 years ago. The word Vipāsanā means seeing things as they really are. It is the process of self-purification by selfobservation. One begins by monitoring the natural breath to concentrate the mind. With a sharpened attentiveness one proceeds to observe the changing nature of body and mind and experiences the universal truths of mortal and miserable life.

Ahiṇsā, Pratyāhāra and contemplation are important wings of Yoga in Jainism.

Yoga in medieval times

Buddha (around 6th century A.D.) had popularized meditation on the entire subcontinent. However, there was a point of disagreement that one cannot start the spiritual practices with meditation immediately. One has to prepare oneself for meditation. During 6th century AD when the influence of Buddhism had declined, some great yogis like Matseyendranātha and Gorakṣanātha set out to purify the system. There were many treatises on Haṇha Yoga written during this time.

The main texts written during this period are Haṣha Yoga Pradīpikā by Svātmarāma, Gheraṇṇa Saṇhitā a conversational treatise, Haṣharatnāvalī by Śrinivāasa yogi which also discusses Āyurveda along with Yoga, Śiva Saṣhita, Siddha siddhānta Paddhati by Nityanātha etc.

Guru Gorakṣanātha is believed to be the founder of the Nātha Sampradāya and it is stated that the nine

Nathas and 84 Siddhas are all human forms created as Yogic manifestations to spread the message of Yoga and meditation in the world. They were Yogis, who reveal samādhi to mankind. Guru Gorakṣanātha is thought to have authored several books including: Gorakṇa Saṇhitā, Gorakṇa Gītā and Yoga Cintāmaṇi.

Yoga in modern times

Integral Yoga or Pūrṣa Yoga by Śri Aurobindo emphasised surrendering to the Divine and an opening to the Divine Force so that it may work to transform one's being.

Sri Ramakrishna Paramahaṣsa, records for the path of Bhakti Yoga and Divine love. To Ramakrishna all religions are revelations of God in His diverse aspects to satisfy the manifold demands of the human mind. One of the greatest contributions of Śri Ramakrishna to the modern world is his message of harmony of all religions.

Swami Vivekananda summarised the Vedānta's teachings as follows:

1. Each soul is potentially divine.
2. The goal is to manifest this Divinity within by controlling nature, both external and internal.
3. Do this either by work (Karma Yoga) or worship (Bhakti Yoga), or psychic control (Rāja Yoga) or philosophy (Jñāna Yoga)—by one, or more, or all of these—and be free. This is the whole of religion.
4. The doctrines, or dogmas, or rituals, or books, or temples, or forms, are but secondary details.

AIMS AND OBJECTIVES OF YOGA

Yoga has existed from Vedic period and its importance of is described in several scriptures. Yoga is an essential means to achieve happiness. In Kathapanishat, it is advised to "treat the self as the person seated in the body as the chariot. Then, treat the intellect as the driver (charioteer), the mind as the reins and the senses as the horses. The one who has control of mind directed by intellect there by controlling the senses leads the person to the spiritual goal. Otherwise a person's life will be as of a chariot driven by uncontrolled horses".

In the Bhagavadgita, Lord Krishna emphasizes that the goal of everyone should be to achieve yoga, or state of equanimity. He beautifully describes the blissful state of yoga.

Maharishi Patanjali has made great contributions in removing in three domains namely through ayurveda in body for good health, through commentary on Panini's grammar for good speech and through yoga for achieving pure mind.

Sriranga Sadguru, the founder of Ashtanga yoga Vijinana Mandiram, Mysure, viewed, the chief aim of yoga is to experience the inner of spiritual world having realized the truths through knowledge of process of manifestation of self, senses and body and based on one's own full spiritual development by turning the outward looking self (mind) inwards through the path of sushumna.

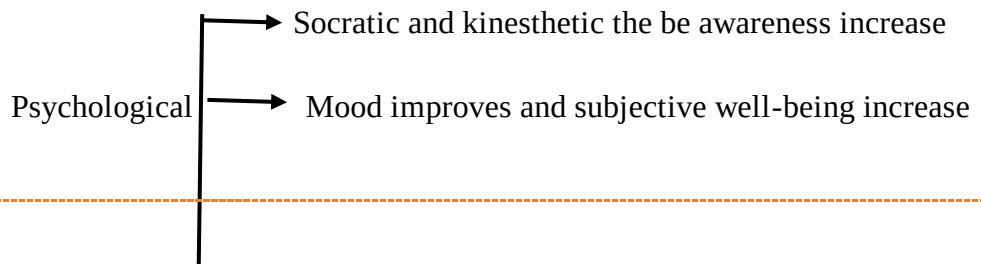
The aim of yoga is to achieve parity and clarity of manas (mind), buddhi (intellect) and chitta (consciousness)

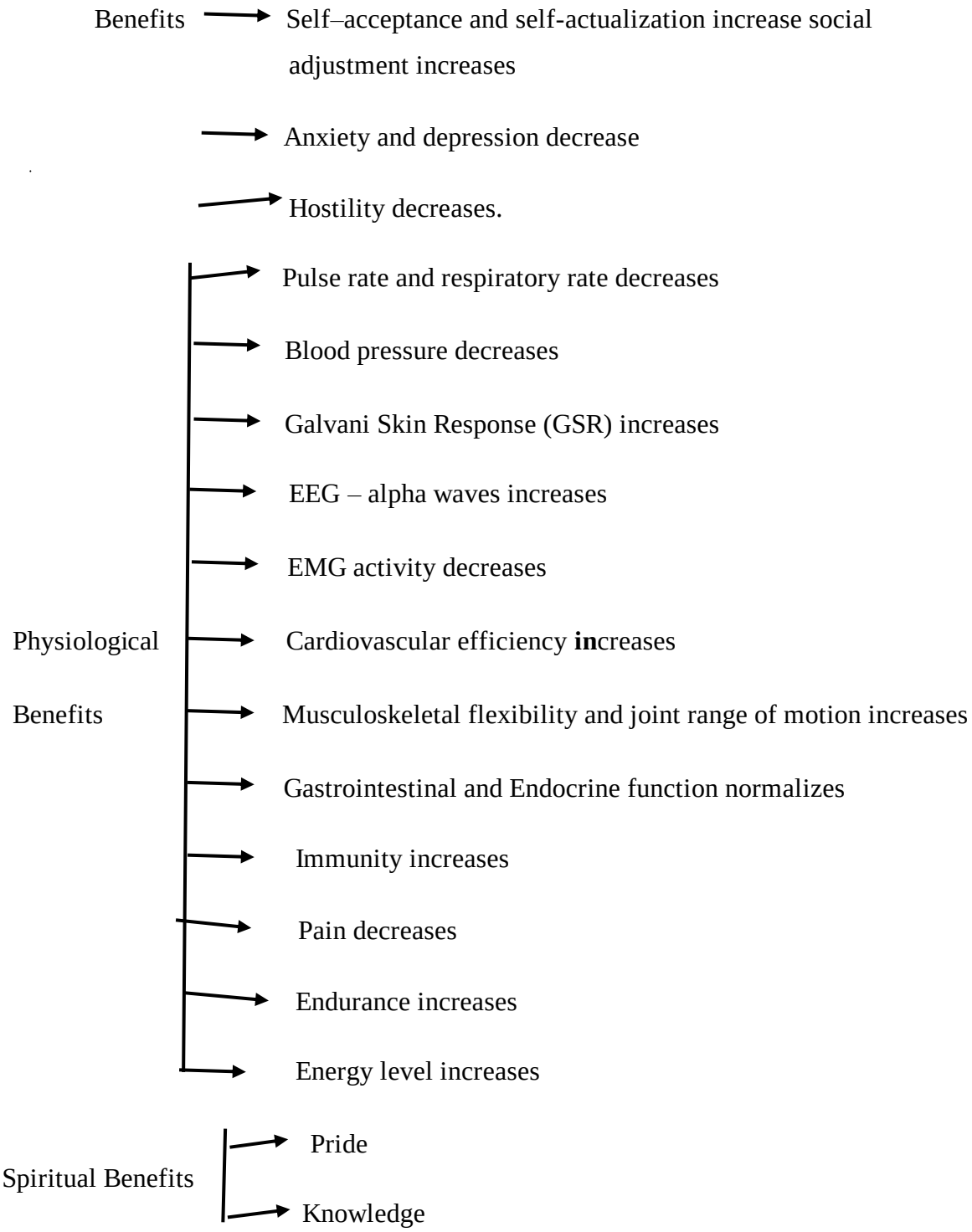
Yoga deal with providing answers for the basic questions of life. The important tools of a human being namely mind, breath, speech, and body are used in the process of yoga to achieve the highest goal of human life namely God realization, resulting in pure Bliss.

The ultimate aim of yoga is to make it possible for everyone to be able to fuse together the gross material (annamaya), physical (pranayama), mental (manomaya), intellectual (vijnanamaya) and spiritual (anandamaya) levels within every being.

BENEFITS OF YOGA

Prof. Basavaraddi, Director, Moariji Desai National Institute of yoga, New Delhi summarizes the benefits of yoga in the following aspects.





Morarji Desan National Institute of Yoga (2006-2007) conducted a study on the "effect of yoga practices on management of Techno – stress in computer uses: A quantitative approach using psychoneuro – physio motor functions". The results of the study were as follows.

- Significant positive difference found in computer hassles between the participants of experimental group and control group.
- Significant positive difference found in the general stress level between

- Significant positive difference found is the occupational strain related parameters like psychological strain, vocational strain and physical strain between the participants of experimental group and control group.
- Significant positive difference found in the parameters related occupational role like role overload, role insufficiency, and role ambiguity between the participants of experimental group and control group.
- Significant positive difference found in Neck, Solder, Back and wrist pain between the participants of experimental group and control group.
- Significant improvement found in self-care among the participants of experimental group
- Moranji Desai National Institute of Yoga summarises the findings of the study conducted on pranayama and meditation.

Research findings on Pranayama

- The oxygen intake is reduced to less than one fourth in pranayamic breathing compared to normal breathing.
- The diffusion gradient of various gases is not much affected during the phase of kumbhaka.
- The free acid radical content in the blood reduces because of reduced oxidation process.
- Better neuro-endocrinal coordination is established.
- Studies on Nostril Dominance have confirmed the effect of regulated breathing on specific areas of the brain.
- Reduction in secretions of stress hormones and decrease in Basal Metabolic Rate.

Research findings on Meditation

- Meditation and mindfulness calms Amygdala, an area of the brain associated with the fear response that is a factor in anxiety and stress disorders.
- Meditation helps in balancing neurotransmitters.
- A study on brain scan of Buddhists practicing meditation regularly indicated an heightened activity in left pre-frontal lobe of the brain-an area associated with positive emotions, self control and calm temperament.

Major Schools or Types or Streams of Yoga

The human personality can be divided broadly into four fundamental categories: emotional, active, intuitive and volitional. Patanjali has clearly understood this fact and that each person has a different

temperament and inclinations according to predominance of one or more categories. Further, he classified the yoga in following aspects

1. Bhakti yoga or yoga of emotions – path of self-surrender
2. Jnana Yoga or yoga of knowledge – path of self-analysis
3. Raja yoga or yoga of physical control – path of self-control
4. karma yoga or yoga of action – path of self scarifice

1.Bhakthi Yoga

Bhakti yoga is the process of inner purification. The message of bhakti yoga is that love is the most basic human emotion. In its purest form, love is cosmocentric and divinely inspired.

By aims to help a person evolve emotional maturity, love for society and to spread the message of love universal brotherhood and oneness. It helps in transformation of conditional and desirous form of love into true unconditional love. Karma (desire), combined with tyaga (sacrifice) forms prema (love). Prema along with saranagati (surrender) results in bhakti.

2. Jnana Yoga

Jnana is the path of knowledge. The darkness of ignorance can only be dispelled by the light of knowledge. Knowledge, according to Jnana yoga, has two aspects: fire and light. The fire of knowledge barras all the impurities of our mind, and simultaneously, knowledge enlightens our inner consciousness. The psychology of Jnana yoga tells that we cannot generate spirituality by artificial means. The method of Jnana yoga is to persuade the seeker that his or her sole identity is the self. By hearing, reading, thinking and meditating about the self, the mind gradually realizes that the self is the only reality in this universe and that all else is unreal.

The ultimate aim of Jnana yoga is to understand the reality of atma (soul) and the ability to differentiate it from body. A person truly established in the path of Jnana yoga becomes frce from all worldly desires and has contentment. There are three phases in Jnana yoga.

a) Sravana – first exposure to knowledge at any form
b) Manana – revisiting the knowledge for further understanding
c) Nididhyasana – experimentation.

3.Raja Yoga

Raja yoga is also called 'royal road'. The chief practice of raja yoga is meditation. Raja yoga seeks to attain the Divine by igniting the flame of knowledge of the self within. There are two types of practices under Raja Yoga.

a) Bahiranga yoga offers rules and regulations at the behavioural level (yama and niyma) as well as physical practices to gain better control over the body and the mind (asanas and pranayama)
b) Antaranga yoga comprises of concentration (dhrana), meditation (dhyana), and consciousness (samadhi)

Raja yoga asks the seeker to confront the deep rooted tendencies and restlessness of the mind by cultivating a single thought reminiscent of the Divine.

4.Karma yoga

The best introduction to karma yoga is given by the 19th century philosopher, Vivekananda. The word 'karma' is derived from the Sanskrit word 'kri' meaning 'to do' all action is karma. Karma yoga is the Yoga of action. It is the selfless devotion of all inner as well as outer activities as a scarifies to the Lord of all works, offered to the eternal as masters of all the soul's energies and austessifies.

Kinds of Karma

There are three kinds of karma

a. Sanchita or the Accumulated works

Sanctita is all the accumulated karmas of the past. Part of it is seen in the character of man in his tendencies and attitudes, capacities, inclinations and desires.

b. Pravabdha or the fructifying works

Pravabdha is that portion of the part of karma which is responsible for the present body. It is ripe for reaping. It cannot be avoided or changed. It is only exhausted by being experienced. You pay your past debts.

c. Kriyamana or current works

Kriyamana is that karma which is now being made for the future. It is also called Agami or Vartamana.

Principles of Karma Yoga

a. Right motive

Swami Vivekananda advises as to "give your hands to work, and keep your mind fixed at the lotus feet of the Lord".

b. Right Move

Swami Vivekananda says main generally plans to get the fruits of his works before he starts any kind of work. The mind is so framed that it cannot think of any kind of an if kind of work without remuneration or reword. A selfish man cannot do any service. He will weigh the work and the money is a balance. Selfless service is unknown to him.

c. Do your Duty Best d. Serve God or the self in All

e. Follow the discipline of the job

General Guidelines for Practicing Yoga

- Keep a separate room for practicing Yoga.
- Yoga can be practiced after age of seven
- Wear modest clothes to make breathe freely. No baggy clothing, instructor needs to see alignment.
- No heavy jewellery.
- No Perfume or cologne.
- Yoga is practiced is bare feet. Remove the shoes before entering the Yoga room turn off mobile.
- Be systematic in practice, begin with simpler postures and progress to the more complex.
- Yoga is to be practiced on an empty stomach.
- Be systematic in practice, begin with simpler postures and progress to the more complex.
- Breath through nose at the time of practing. Keep the mouth closed and eyes open.
- Avoid consuming any food 3 hours prior to yoga practice.
- Drink pleanth of water to help in the elimination of toxins from the body that have been released as a result of the practice session.
- One could practice yoga even before bath but, after practice one should wait for some time and take a bath.

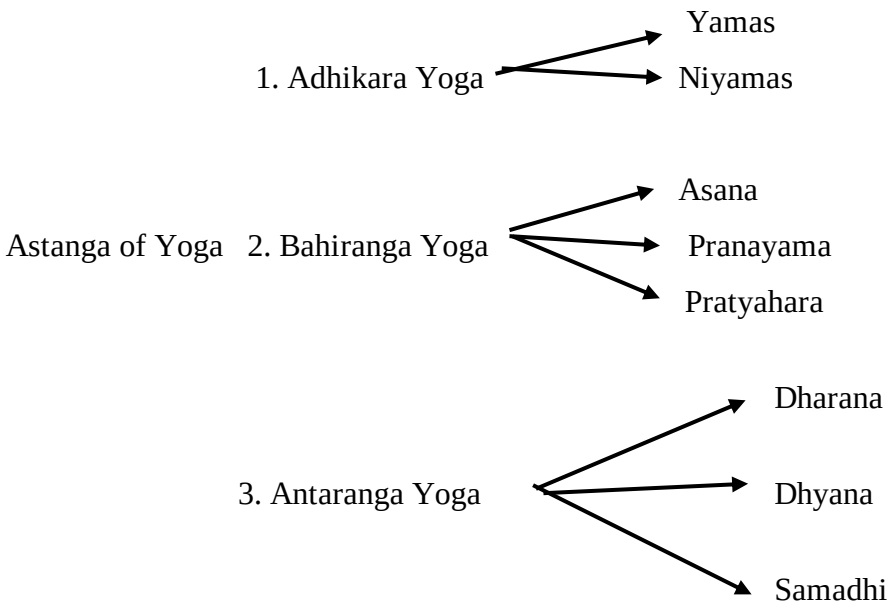
- One should not practice yoga directly on ground, one should spread a carpet a blanket or a clean cloth, sit on it and start yoga practice by facing east or north in the morning, west or south in the evening.
- Women should refrain from regular yoga practice during their mensus as and pregnancy.
- Avoid Yoga exercise at least 4-5 months after surgery.
- Yoga advocates only vegetarian food.

EIGHT LIMBS OF YOGA

Yoga has its roots about 5000 years BC as described in Vedic Philosophy and Tantras. Patanjali, great sage composed this path in his Book 'Patanjali Yoga Sutra'. The Yoga Sutras serves as the basic text for an in-depth study of this great science. Patanjali called it Astanga Yoga i.e science having eight limbs viz,

1. Yama (moral code)
2. Niyama (Personal Disciplines)
3. Asana (Postures)
4. Pranayama (Breathing)
5. Pratyahara (Withdrawal of senses)
6. Dharana (Concentration on object)
7. Dhyan (Meditation)
8. Samadhi (Salvation)

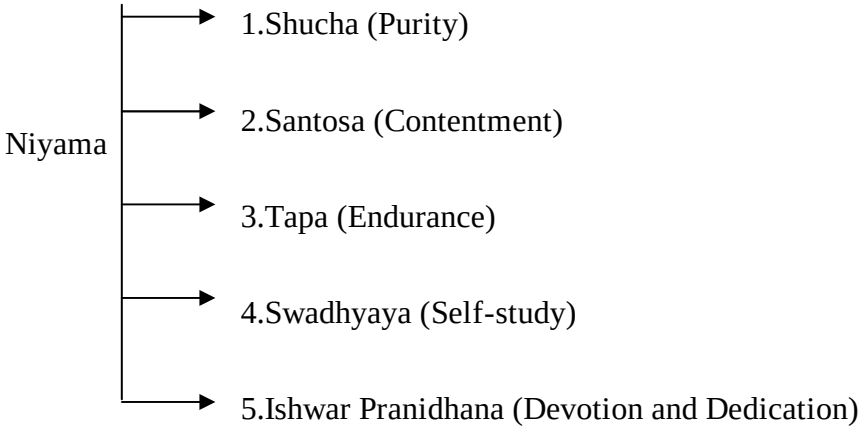
For the sake of convenience in treatment and understanding, these eight limbs of Yoga are divided into the following three head



1. Yama

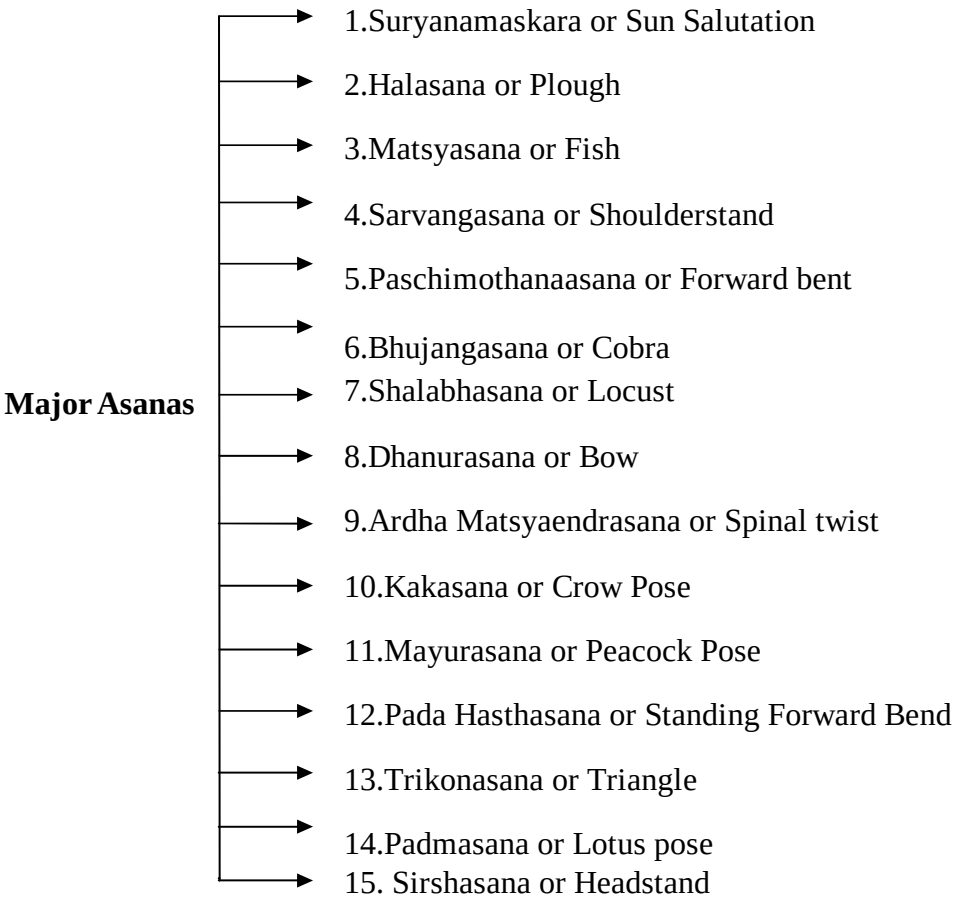
Yama means way of life or discipline. The first step of Yoga is Yama. It says about, perfecting the mind and body following certain values rigorously. The following are the constituents of Yoga.

2. Niyama



3. Asanas

Asanas one of the aspects of yoga is important to perfect the Postures and maintain flexibility of body as well as regulate breathing. Although there are thousands of asanas in the literature, the following are the major asanas practiced now a day.



4. Pranayama

The term Pranayama is derived from the Sanskrit term 'Prana' which means vital principle. Prana is life. Prana is very often misunderstood as breath. Prana stands for the manifested life energy which expresses itself in the various physiological functions such as Perception (Prana), excretion (Apana), digestion (Vyana), Circulation (Samana), and thoughts (udana). Prof. Aruna Goel classified the Pranayama into eight kinds and calls them kumbhakas. Kumbhaka means retention of breath.

Kinds of pranayama

- Surya bhedhana
- Unaayi
- Seetkari
- Shitali
- Bhastrika
- Bharamari
- Moorcha
- Plaavlni

Pranayama has four movements.

Movements of kumbhaka

1. In-breath (Pooraka)
2. Retention after in – breath (antara kumbhaka)
3. Out-breath (rechaka)
4. Retention after our breath (bahyakumbhaka)

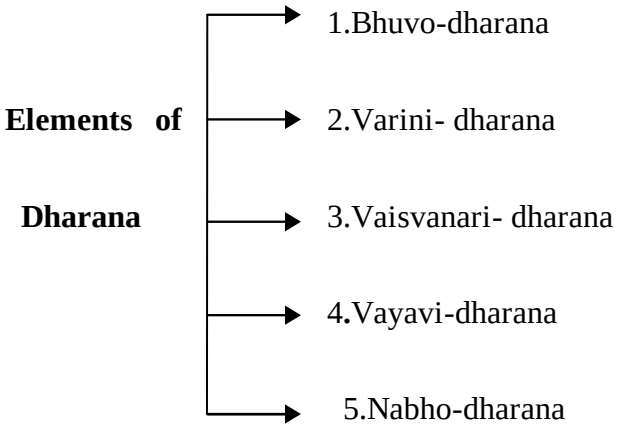
5. Pratyhara

The term 'pratyahara' consists of two words 'prati' and 'ahara' meaning denying the senses of their food viz. controlling senses from rushing towards their objects and thereby control the mind.

6. Dhavana

Dhavana indicates broad based field of attention (inside the body and mind) which is usually understood as concentration. Mind is a super computer. Mind is full of tremendous potentialities. If used properly it can bring peace and bliss in life which it's improper use can create upheavals in life. There is a need to understand the true potentialities of mind. The basic idea of Dharana is concentration of mind on one object and its field. It deals with the development of the ability of the indrawn mind to focus and concentrate on a sacred object.

The Lonavla Yoga Institute describe there are five elements of Dharana,



7. Dhyana

Dhyana referred as meditation, is continuous contemplation or concentration on the sacred object. Meditation is to be achieved like a lamp (steady mind) in the absence of flickering wind (wavering wordly thoughts). Swami Lokeswarananda (1995) defines meditation is thinking, thinking deeply, with deep concentration. The Gita says that it is hard to control the mind, just as hard as controlling the wind.

Nagaratna and Nagendra (2001) concluded the benefits of meditation based on their experiments. The benefits of meditation are:

i) Mind dwells on a single thought of choice.
ii) Deep relaxation of all parts of the body.
iii) Reduced metabolic rate by slowing of breath.
iv) Freshness, lightness and a feeling of expansion at mental level.
v) Calmness, peace and serene bliss and
vi) Continuous awareness.

8. Samadhi

Samathi is the quite state of blissful awareness. It refers to an experience of transcendental state of balance and deep spiritual absorption. This is an individual internalised experience. Further, it is state of super bliss, joy and merging individual consciousness in to universal consciousness. Union between Jivatman and Paramatman. Realization of God is the ultimate achievement of human birth.

Samadhi is a Sanskrit term for the state of consciousness induced by complete meditation. Etymologically the term comes from 'Sam' means together or integrated, 'a' towards, and 'Dha' to get or to hold. Thus the result might be seen to be to acquire integration or wholeness, or truth (Samapatti).

Samadhi can also categorised as,

1. Laya Samadhi – latent, potential level of Samadhi.
2. Savikalpa Samadhi – initial temporary state of full-valued Samadhi.
3. Nirvikalpa Samadhi – highest transcendent state of consciousness.
4. Sahaja Samadhi – only the truly enlightened can be and remain spontaneously free.
5. Mahasamadhi – is a term often used for this intentional departure from the physical body at death.

ASANAS

Asana is one of the most ancient yogic practices. It is also called as the other practices of yoga, namely

Kranayama, Kriyas, Meditation, Bandhas and Mudras. The term Asana is derived from the Sanskrit root "Aas" means 'to sit' or 'Asi' means 'to be'. Maharishi Patanjali defined asana is a posture held firm or stable with comfort. From the above definition the two key characteristics of asana are stability and comfort. Here 'stability' signifies immobilization or stability of the body and 'comforts' refers a harmonious peaceful and serene mental state.

Asanas are innumerable in number. The Hatha Yoga texts say that there are about 84, 00,000 asanas. Asanas are not just physical exercises. They are bio-physio-psychological postures. The cells of the body have their own design of functioning, intelligence and memory. Sri Brahmanada explains the effects of asanas in the following words. The "body is a lazy (tammasic) mind vibrant (raajastic) and soul, serene and luminous (saattvic). Through perfection in asanas, the three parts of man-body, mind and soul-become one as if they are the very expressions of the indweller (Jeevaatma)".

Yogasanas are specialized postures of the body often imitating many of the animal postures. Large numbers of Asanas exist. Arun Goel (2007) in his book on "Yoga Education: Philosophy and Practice" listed the yogasanas in the following aspects.

Sitting Posture **Lying Posture** **Standing Posture**

- Padmasana
- Swastick Asana
- Vajrasana
- Paschimottunasana
- Ardhachakrasana
- Garbhasana
- Uttanamandukasana
- Bhadvasana
- Kapalabhati
- Nadi Shuddi Pranayama
- Bhramri Pranayama
- Sheetali
- Meditation

Powanamutasana
Sarvangasana
Halasana
Matsyasana
Mayurasana
Shalabhasana
Dhanuvasana
Suptavajrasana
Kurmasana
Makavasana
Shavasana

Tadasana
Urdhavahastottanasana
Padhastasana
Katichakrasana

Surya Namaskar

Meaning

Surya namaskar is one of the most important yoga practices. It is the set of 12 yoga poses which can be performed while chanting 12 different mantras. Mantras add a profound spiritual element to the practice.

Surya Namaskar or Sun Salutation is a Yoga warm up routine based on a sequence of gracefully linked asanas. (Carol Mitchell, 2003).

The nomenclature refers to the symbolism of sun as the soul and the source of all life, Krishan (Kumar Suman, 2016). It is relatively a modern practice that developed in the 20th centuary (Dona Schuster, 1990).

Surya Namaskar is sometimes translated as "eternal salutations to the sun". In Sanskrit, Surya means 'Sun' and namaskar means 'Salutations'. The practice of Surya Namaskar awakens the body intelligence to create energy directly from the sun. In the Vedic tradition, the sun is symbolic of consciousness and, therefore, has been worshiped daily in the Indian culture.

Yogapedia Explains

Surya namaskar is designed to access the ethereal energy that exists all around us. Every morning at dawn, the air is filled with Prana sakthi, or life energy. When performing facing east during the first rays of

the morning sun, breathing correctly and chanting mantras, one experiences a phenomenal affect on the mind, body and spirit.

Surya Namaskar Yoga Steps

In Surya Namaskar, you salute the sun with these 12 steps in the early morning. The surya namaskar steps are given below

1) Pranamasana – (Prayer pose)

surya namaskar yoga pose Pranamasana

- Pranamasana is the first step of Surya Namaskar Yoga Steps.
- Feel composed and stand on your mat. Keep your feet together and balance your weight equally on your feet.
- By standing on the edge of your mat, relax your shoulders and expand your chest.
- Then breathe the air in and lift your hands from the sides simultaneously.
- Put your palms together in front of your chest in prayer position while you exhale the air.

2) Hastauttanasana – (Raised Arms pose)

surya namaskar yoga pose Hastauttanasana

- Pranamasana is the second step of Surya Namaskar Yoga Steps.
- Do the breathing in and raise your arms up.
- Keep the arms close to your ears all the way and stretch backward.
- You should stretch the body from your toes to the tip of the fingers.
- The mere bending of the body backward doesn't give the good results.

3) Hasta Padasana – (Hand to Foot pose)

Pranamasana is the third step of Surya Namaskar Yoga Steps.

surya namaskar yoga pose Hasta-padasana

- Now bend down and by keeping your back straight, try to touch the floor with your palms. Don't bend your knees and try to touch the knees with your head. It would be difficult initially and will become easy with time.
- Exhale and bend down. Exhale completely and touch the floor with your palms. Keep the palms in one position and don't move them here and there.

4) Ashwa Sanchalanasana – (Equestrian pose)

surya namaskar yoga pose ashwa Sanchalanasan

- Pranamasana is the forth step of Surya Namaskar Yoga Steps.
- Push your right leg back as far as possible while breathing in.
- Let the right knee touch the floor and look up.
- Keep your left leg between your hands.
- For the best results, keep your foot exactly between the hands.

5) Dandasana – (Stick pose)

Pranamasana is the fifth step of Surya Namaskar Yoga Steps.

surya namaskar yoga pose Dandasana

- In the same pose, breathe in and bring your left leg back.
- Keep your whole body in a straight line.
- Keeping your arms straight and perpendicular to the floor will enhance the result.

6) Ashtanga Namaskara – (Salute with Eight Parts or Points)

surya namaskar yoga pose ashtanga namaskara

- Pranamasana is the sixth step of Surya Namaskar Yoga Steps.
- Bring your knees down to the floor gently and breathe out. Raise your hip slightly and keep your chest and chin touching the floor.
- Keep your side of the hands close to your body and touch the ground with your palms.
- In this salutation, the eight parts of your body which include two hands, two feet, two knees, chest, and chin should touch the ground.

7) Bhujangasana – (Cobra pose)

Pranamasana is the seventh step of Surya Namaskar Yoga Steps.

surya namaskar yoga pose bhujangasana

- Raise your chest like a cobra. Keep your elbows down, keep the shoulders away from the ears and look up.
- While breathing in, gently push forward your chest and similarly while you breathing out push your navel down.
- Stretch yourself fully but don’t force your body.

8) Adho Mukha Svanasana – (Downward-Facing Dog pose)

surya namaskar yoga pose adho mukha swavasana

- Pranamasana is the eighth step of Surya Namaskar Yoga Steps.
- By keeping your chest downwards, lift your hip and tailbone up.
- Keep the heels, touching the ground.
- Stretching to the maximum gives the best result.

9) Ashwa Sanchalanasana – (Equestrian pose)

surya namaskar yoga pose asana ashwa sanchalanasana

- Pranamasana is the ninth step of Surya Namaskar Yoga Steps.
- As you have already done it, bring the right foot between your hands this time.
- Keep the left knee down to touch the floor. Push the hip down and look up.
- Keeping the right hand at the exact center between the hands and pushing your hip down gently to give the maximum stretch is the good way to do this salutation.

10) Hasta Padasana – (Hand to Foot pose)

surya namaskar yoga pose asana hastha padasana

- Pranamasana is the tenth step of Surya Namaskar Yoga Steps.
- Bring your left foot forward, while breathing out. Keep your palms down to touch the floor.
- Slight bending of knees in this position could be allowed if you feel not easy with the position.
- Straightening your knees slowly to the maximum and touching the knees with your nose give the maximum stretch.

11) Hastauttanasana – (Raised Arms pose)

Surya namaskar yoga pose asana hasthuttansana

- Pranamasana is the eleventh step of Surya Namaskar Yoga Step.
- Breathe in and stretch your spine up.
- Raise your hands to go up while bending back little.
- Push your hip slightly upward.
- Keeping your hands to touch the ears, gives the good upward stretch.

12. **Tadasana – (Mountain Pose)**

surya namaskar yoga pose asana tadasana

- Pranamasana is the twelth step of Surya Namaskar Yoga Steps.
- Breathe out and bring back your body to the straight position.
- hen bring your arms down. It's time to relax and feel the resonance with nature.
- Keep calm for a while and observe your body.
- If you follow the procedures and do the surya namaskar steps regularly it will open the world of good for you.

Benefits of Surya Namaskar

The morning Practice is designed to work on all body parts, every organ, every system and every chakra. It is also believed to be the most efficient way to connect with our core inner strength.

- Due to beautiful combination of the variability and repetitive nature of Surya Namaskar, it allows individuals to perform self motivated practice without getting bored or mindless and it allows for easy Self-maneuvering since it is repetitive in nature.
- Adding mantras during the practice removes monotony, provides harmony within and produces soothing vibrations that removes fatigue.
- Salutations to the sun, the visible divinity in nature, allow one to practice in faith. Visualizing the sun in one's heart center brings a sense of peace and wholeness.

The body is equipped with the innate intelligence to produce energy from the sun directly. The mind, through the solar plexus; the body, through physical movement; and the spirit, through the chants, all get a boost from the practice of Surya Namaskar. Therefore, it is a complete workout for mind, body and soul.

Preventive and Curative Effects of Yoga and Asanas

In a study conducted at Massachusetts General Hospital, researchers found that those who took part in mind-body relaxation program, participants used 43% fever medical services than did the previous year.

The National Health Service (NHS) in England employing more than 1.5 million staff and treating over 1 million every 36 Hours, the staff of the NHS faces a huge challenge. As a result, every year health care professionals suffer from a variety of mental health and musculoskeletal problems, costing the NHS £ 2.4 million every year in absenteeism. Then, Simon Stevens, head of the NHS, designed a well-being initiative that included yoga as part of a major drive to improve the well-being of NHS staff.

Numerous studies have demonstrated yoga's efficacy in addressing some of the common issues faced by healthcare staff – including depression, lower back-pain and metabolic disorders – but it can also improve efficiency at work and encourage greater compassion towards patients.

Kaushik Halder and Rameswar Pal (2014) found that the Ashtanga yogic practice improves the aerobic capacity, anaerobic capacity, joint flexibility, and muscle strength. Evidence shows that the regular execution of these practices provides the practitioner with more physical flexibility, muscle strengthening, increased vitality, delineated psychological stress, and reduced cardiovascular risks.

Yogic techniques are known to improve one's overall performance and work capacity. During yoga session, the postural maneuvers are executed without repetition and are connected to each other by passages that establish links between the exercises in a sequence. Yoga is not only a discipline to be practiced by saints or spiritual aspirants but also has relevance to the spirit of military activities.

Arndt Bussing et al (2012) summarizes that yoga may well be effective as a supportive adjunct to mitigate some medical conditions, but not yet a proven stand alone, curative treatment. Larger-scale and more rigorous research with higher methodological quality and adequate control interventions is highly encouraged because yoga may have potential to be implemented as a beneficial supportive / adjunct treatment that is relatively cost – effective, may be practiced at least in part as self-care behavioural treatment, provides life-long behavioural skill, enhances self-efficacy and self confidence and is often associated with additional positive side effects.

Cardiovascular Endurance

Innes et. al. reported on 37 studies investigating the effects of yoga on blood pressure and hypertension. Most reported a reduction of systolic and diastolic pressure.

Ospina et.al found a small significant improvements of systolic and diastolic blood pressure in favour of yoga when compared to no treatment. When compared to health education, yoga interventions resulted only in small and insignificant improvements of systolic blood pressure and diastolic blood pressure.

Pulmonary function

Raub examined the yoga's effects on lung function in healthy volunteers and patients with chronic bronchitis and asthma. In healthy volunteers practicing yoga, there are reported improvements of various parameters of lung function with breathing control techniques, specific postures, and relaxation techniques.

Asthma

Studies conducted at yoga institutions in India, have reported success in improving asthma. One study of 225 patients with asthma found that yoga resulted in improvement or cure in 74% of asthma patients. A study of 46 adolescents with asthma found that yoga practice resulted in a significant increase in pulmonary function and exercise capacity and led to fever symptoms and medications. Patients were given daily training in yoga for 90 minutes in the morning and 60 minutes in the evening for 40 days.

High Blood Pressure

The relaxation and exercise components of yoga have a major role to play in the treatment and prevention of high blood pressure (hypertension). A combination of biofeedback and yogic breathing and relaxation techniques has been found to lower blood pressure and reduce the need for high BP meditation in people suffering from high BP. In 20 patients with high BP who practiced biofeedback and yoga techniques, 5 were able to stop their BP medicate completely, 5 were able to reduce significantly the amount of medication they were taking, the remaining had lower BP than at the beginning of the 3 month study.

Diabetes

A study of 149 persons with non-insulin dependent diabetes found that 104 had lowered blood sugar and needed less oral anti-diabetes medication after regularly practicing yoga.

Mood Change and Vitality

A British study of 71 healthy volunteers aged 21 to 76 found that a 30 minute program of yogic stretching and breathing exercises was simple to learn and resulted in a "markedly invigorating" effect on perceptions of both mental and physical energy and improved mood.

Insomnia

The quality of steep sleep will improve because of yoga's beneficial effect on the nervous system, and in particular the brain.

Yoga and Beauty

Swami Sivananda viewed that "by practicing the asanas regularly, men and women will acquire a figure which will enhance their beauty and that supplances which gives them charm and elegance in every movement and be endured with a peculiar glow in his face and eyes and a peculiar charm in his/her smile.

Yoga and Mental Health

Those practicing yoga experiences a number of facts that results in a profound effect on their mental health.

a) Reduction of tension

b) Restoration of pliability → avoidance of fear
Restoration of pliability → acceptance of faith

c) Personal values

d) Social values

Health Conditions and Benefits of Yoga

In 1983-84, the Yoga Biomedical Trust conducted a survey among 3000 individuals with health ailments for which yoga was described as an alternative therapy. The results of the study are shown in the below table.

Sl. No.	Ailment	Number of cases Reporting	Percentage Claiming Benefit
1	Back Pain	1,142	98
2	Arthritis or Rheumatism	589	90
3	Anxiety	834	94
4	Migraine	464	80
5	Insomnia	542	82
6	Nerve or muscle disease	112	96
7	Menstrual problems	317	68
8	Premenstrual tension	848	77
9	Menopause disorders	247	83

10	Hypertension	150	84
11	Heart disease	50	94
12	Asthma	226	88
13	Duodmal ulcers	40	90
14	Hemorrhoids	391	88
15	Obesity	240	74
16	Diabetes	10	80
17	Cancer	29	90
18	Tobacco addiction	219	74
19	Alcoholism	26	100

UNIT – II: HEALTH EDUCATION

INTRODUCTION

Today India needs not only intellectuals but also strong and healthy men and women for her progress and prosperity. There is a popular saying in 'Sanskrit, Agrogyam Parmo Lavah", i.e. health is the greatest blessing of all. Our health determines the standard of health of our family, community and nation to which we belong. Our personnel hygiene significantly contributes to promotion and maintenance of national health.

HEALTH EDUCATION

Meaning

Health education as any activity which promotes health-related learning, i.e. some relatively permanent change in an individual's competence or disposition. Effective health education may thus

produce changes in understanding or ways of thinking, it may bring about some shift in belief or attitude; it may influence or clarify values; it may facilitate the acquisition of skills' it may even effect changes in behavior or lifestyle.

Definitions

Dr. Thomas Wood defined health education is the sum of experiences with favourable habits, others, and knowledge relating the individual, community and social health". Rather Grout define 'the transaction of what is known about health in to desirable individual and community behaivour pattern by means of educational process.'

Approaches to Health Education

There are three approaches to health education.

1. The preventive model
2. Radical- political model
3. Self-empowerment model

1. The preventive model

The goal of the preventive model of health education is to persuade the individual to take responsible decisions, i.e. to adopt behaviours which will prevent disease at primary, secondary and tertiary levels. This is the traditional and orthodox approach which also incorporates the sub-goal of proper utilization of health service.

1. Radical-political model

The goal of the radical-political model is to get to the roots of the problem of ill heath or to change the metaphor, refocus upstream. It is concerned to achieve social and environmental change by triggering political action.

2. Self-Empowerment model

The third model of health education to be considered is a self-empowerment model. It derives from an educational model whose philosophy reflects the society for public health education of America's (SOPHE) goal of fostering informed choice. This model seeks to facilitate choice not merely by providing understanding, value clarification and practice in decision making, but by attempting to empower the

individual. It incorporates a fundamental tenet that in a democratic society social change can occur only by empowering individuals or groups of individuals to modify their environment.

The self-empowerment model of health education could be solid to promote health positively and directly as well as facilitating health choices of any and every kind. The process is outlined in the following figure

School Health Education

Schools have been widely promoted as a major context for the delivery of health education. This is an acknowledgement of the importance of health as integral to the complete development of the individual; of the tight to health knowledge for the own sake; and the perceived significance of the early learning of health-related knowledge, attitudes and behaviors for the present and future health of individuals and their families and communities. Schools, moreover, in many countries can reach a large proportion of the population over an extended period of time.

The school supports the health education of its pupils into two main ways; by offering appropriate programmes of teaching within the formal curriculum and by ensuring that the school environment as a whole supports the classroom work. The role of schools in achieving both education and health has been described by Kolbe (1987) is as follows:

Health and education are interdependent goals and schools provide one of the most universal and efficient means of achieving them both; in virtually every nation schools comprise existing systems, facilities and trained personnel to protect and improve the health of communities.

Goals of school Health Education

Kolbe (1987) proposed the following are the goals of school health education,

1. To increase understandings about the philosophy of science of individual and societal health
2. To increase the competencies of individuals of make decisions about personal behaviours that will influence their health.
3. To increase skills and inclinations to engage in behaviours that is conducive to health.
4. To increase the skills of individuals to maintain and improve the health of their families, and the health of the communities in which they reside.

Objectives of School Health Schemes

The objectives of the programme of a school health service are as follows:

1. The promotion of positive health
2. The prevention of diseases early diagnosis, treatment and follow-up of defects
3. Awakening health anxiousness in children
4. the promotion of healthful environment.

Current Scenario of Medical and Health Facilities in the Government of Tamil Nadu

1.	Government Medical Colleges	-	22
2.	Hospitals attached with medical colleges 48	-	48
3.	Tamil Nadu Government Multi Super specialty Hospital	-	1
4.	Dental college and Hospital	-	1
5.	District Head quarters Hospitals	-	29
6.	Taluk and non –Taluk Hospitals	-	274
7.	PHC'S	-	1,747
8.	Health Sub Centers (HSCs)	-	8,706
9.	Urban Primary Heath Centers	-	476
10.	New Community Health Centers	-	15
11.	ESI Hospitals	-	10
12.	ESI Dispensaries	-	216
13.	Indian System of Medicine Hospital and Dispensaries	-	1,491

Tamil Nadu Dr.MGR Medical University was established in the year 1987 functioning from July, 1998 Ministry of Health – Best Practices.

1. Cardiovascular Organ Transplantation
2. Public Health Care.
3. Tamil Nadu Medical Services Corporation
4. Congenital Fetal Abnormality Detection
5. Maternal Service Anaemia Management
6. Birth companion programme
7. Maternity Bangle Ceremony
8. Well Functional and co-located Services
9. Martuary Van Services
10. State Healthy Data Resource Centre
11. Immediate issuance of birth certificate after delivery

12. Modified School Health Programme.
13. Award for District Collectors
14. Palliative Care Treatment
15. Maternal Health Review

Budget 2017-18

The Government is increasing the budget to the Health Sector every year substantially. Rs.10, 157. 86 crores was allotted in the budget for the year 2017-2018. Apart from the above Provision Rs 387.38 crore was allocated towards civil work and Rs.362.79 was allocated be ESI Scheme hospitals.

IMR Infant Mortality Rate

IMR ie death of children before the age of one year per 1000 live births, is a sensitive indicator of health and to nutritional status of the population.

The IMR in Tamil Nadu for the year 2015 is 19 per1000 live births as per the Sample Registration System Survey (2015).

MMR-Maternal Mortality Ratio (MMR) 2015-2016 is 62 per 1,00,000 live births.

Important Services and Programmes

1. Dr. Muthulakshmi Reddy Maternity Benefit Scheme
2. Hospital on wheels programme.
3. Promotion of Menstrual Hygiene

Under this scheme 18 packs of sanitary napkins in a year, at the rate of three packs or two months for each adolescent girl (10-19 years) in rural areas both school going and non –school going girls are provided. In every school in rural areas, the designated teachers are responsible for distributing the sanitary napkins to school students. The objective of the programme is towards increasing awareness among adolescent girls on menstrual hygiene, build self-esteem and empower girls for greater socialization, to increase access to end usage of high quality sanitary napkins.

1. Deworming

Under this initiative, children in the group of 1-19 years are given deworming medicine (Tabulat and syrup- Albendazole) through a platform of school and Anganwadi Centers. It is estimated that 68% a

children between in the age group of 1 to 14 years are at risk of infection with oil Transmitted Helminths (STH). hook worm, pin warm etc. due to poor sanitation and hygienic conditions.

- National Deworming Day 10th February
- Mop-up Day 15th February
- Amma Baby care kit 16 items – announced on 12.08.2015 and implemented on 08.09.2015.
- Amma Arokiya Thittom
- 104 Health Helpline – lanched on 30.12.2013
- Rashtriya Bal Swasthya karyakram (RBSK)
- Rashtriya Kishor Swasthya Karyakram (RKSK)
- Reproduchve Maternal Nuratal, child health and Adolescent Health (RMNCHA)
- Janani Sishu Suraksha Karyakram (JSSK)
- Pre-conception and Pre-Natal Diagnostic Techniques (Prohibition of Sex Selection)Act.1994
- Tamil Nadu State AIDS Control Society (TNSACS)

Tamil Nadu constituted the state AIDS ON 22.04.1995 prevent, control the speed of HIVand provide care, support and treatment is HIV infected/ affected persons. The TANSACS implements HIV/AIDS control programme in the state under the guidelines of National AIDS control organization (NACO). The society works with the aim of achieving the goal. "Getting to zero-No new infection, No HIV/AIDS related deaths, No HIV/AIDS related stigma and discrimination".

Tamil Nadu has been successful in bringing dawn the HIV/AIDS prevalence rate from 1.13% in 2001-02 to

0.27% in 2014-15.

The components of TANSACS

1. Prevention of new infections
2. Information, Educational communication
3. Care, support and treatment
4. Strategic Information Management Systems.

Integrated counseling and testing centers (ICTCS)

In Tamil Nadu there are 781 Stand alone (ICTCS) branded as "Nambkkai Maiyam providing counseling and testing services in Government Hospitals. In addition of this , 16 mobile ICTCS are deployed to reach the unreached and provide services at their door steps. There are 1102 Facility Integrated Counseling and Testing Centers (FICTC3)functioning in the Additional Primary Health Centers. Under PPP 211 private hospitals render ICTC services. Country 2375 HIV counseling and testing ser facilities are functioning in TamilNadu

Red Ribbon Club (RRC)

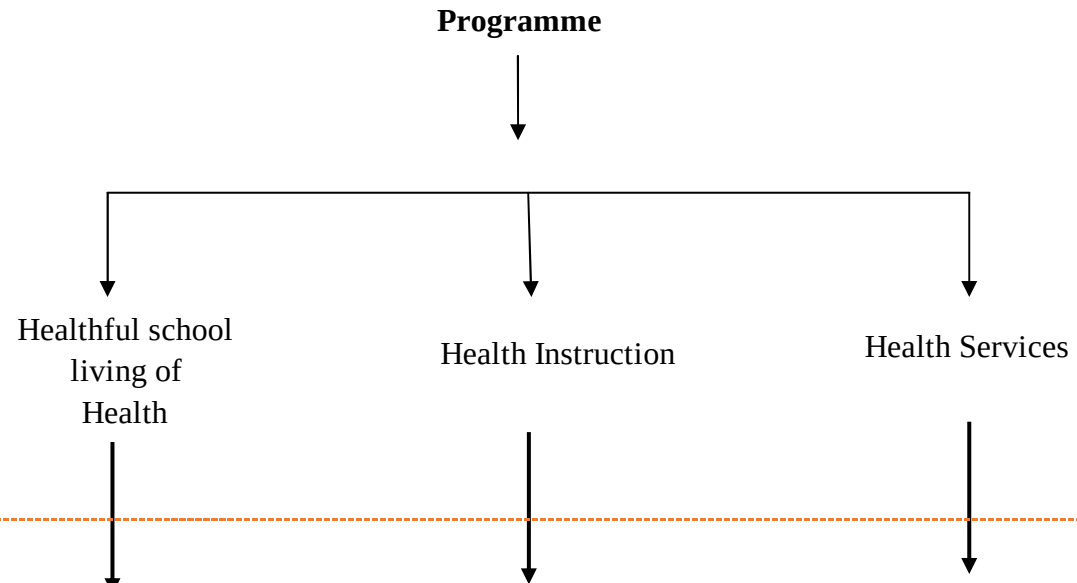
As a pioneer is the Nation, TANSACS established Red Ribbon Clubs (RRC) in the year, 2005 to create awareness and to raise. The risk perception and behavioral changes among the young. There are 2021 RRC functioning in Arts and Science, Engineering, Medical, B.Ed colleges and training Institutions in Tamil Nadu.

Life Skill Education Programme in Schools (LSEP)

This programme aims to provide information Life Skills and knowledge on prevention of HIV/AIDS among the 9^{th} and 11^{th} students in Tamil Nadu. It is imbalanced in 9580 schools through SCTERT **Scope of School Health Education**

Scope of health education includes all such instruction that enlightens a student about activities and functions contributing to preservation, promotion and restoration of health. A thorough knowledge of health rules underlines the needs of the study of anatomy and also the symptoms of common diseases of children.A practical knowledge of causes and diagnosis is equally essential. School health education also includes knowledge about the environment, equipments and routine of the school as well.

Scope of School Health



Hygiene and Sanitation of inspection the school Good Ventilation Appropriate furniture General Cleanliness Proper mid-day meals.	Imparting instruction regarding the development of adequate health and safety knowledge, attitude and skills.	Medical Inspection First aid School Clinic Correcting medical defects among students and school personnel. Special classes for Exceptional Children Control of communicable Diseases.

Health Education Transaction

Health education in school should not be considered as the sole responsibility of a single teacher. Development of healthy lifestyles through healthful living in schools is to be shared by all teachers. Health education concepts have been integrated in subjects like, language, social studies, science etc. It should be taught consciously by the teachers teaching these subjects, keeping in mind the objectives for each level of school education.

Primary Level

The emphases at this stage will be development of health practices through conscious planning and supervision. The teacher will present on example of health behaviour he/ she wishes to develop among students.

Upper Primary Level

In this stage the following measures to be taken:

- Acceptance of personal responsibility for health promotion
- Application of health knowledge and understanding to solve health problem
- Awareness that prevention is preferable to treatment and
- Respect for the health of others.

Secondary and Higher Secondary Level

At this time the consensus effort on the part of teachers to develop practices in to habits may have resulted into a healthy lifestyle. Assignments of exploratory nature may be given in the form of individual or group projects opportunities may be provided to document observations and conclusion, present the results, answer questions and provide clarifications

Recommendations on Health Education

Children are our future and our most precious resources. The quality of tomorrow's world and perhaps even its survival will be determined by the well-being, safety and the physical and intellectual development of children today. Children are the mirror of a nation.

Dr. P.C. Chunder (1979) former minister of education and social welfare GOI in his forward to the National Plan of Action for international Year of the Child has rightly said that

Nations children are its supremely important asset and the nation's future lies in their proper development.... An investment child is indeed an investment in the Nations future. A health and educated child of today is the active and intelligent citizen of tomorrow'.

Emphasizing the importance of the school programme, the National Health Policy has recommended that "organized school health services integrally linked with the general preventive and curative services would require to be established within time limited programme".

The National Policy on Education (1986) has emphasized the need for the overall development of the young child. It states "Recognizing the holistic nature of child development, viz., nutrition, health and social, mental, physical, moral and emotional development. Early Childhood Care and Education (ECCE) will receive high priority and be suitably integrated with the integrated child development services programme, wherever possible". Government of India (1961) Report of the schools education committee made the following recommendations for health education in schools".

Recommendations (Health Education)

1) Health education should be included as part of general education in the primary, middle and secondary schools. The basic education system, as expounded by Mahatma Gandhi contains the essential ingredients of a school health education programme.
2) Steps should be taken to keep the school environment in a sanitary condition. The school administration should provide the right environment to promote health, prevent disease and furnish opportunities to children to practice good health habits.
3) School authorities should employ teachers who are in sound health and should take steps to see that conditions under which they are working are conducive to healthy living.
4) The health personnel should assist the teacher in carrying out his health education responsibilities. They should also help parents to provide facilities for the children to practice at home the health habits learnt at schools.

5) The state administration should play a vital role in the effective implementation of the school health education programme and in setting up standard in the state in accordance with the national policies.

6) The state administration should take immediate steps to publish text books on health education and to have health lessons included in other appropriate text books. Books and teaching aids should be kept up-to-date with scientific health information and adopted to the development level of pupils for whom they are intended.

7) The Central Health Education Bureau (CHEB) and the National Institute of Audio Visual Education, in cooperation with appropriate advisers in various fields of education should develop type instructional material and teaching aids for use in school health education programme.
These materials should serve as guides for the states to develop their own aids and material.

8) In primary grades, the emphasis should be placed on practicing healthful living. The teaching should be practical and related to pupil's past experience, his home conditions and his present needs.

9) The learning experiences in middle classes should be 'life centred" rather than 'book-centred'. In schools where there are special subject teachers, the health content of the curriculum may be correlated with the specific subjects taught. Where the class teacher is responsible for all teaching in the class, he should be responsible for health teaching as well.

10) The health curriculum for secondary schools should be carefully planned so as to avoid unnecessary duplications and serious omissions, with appropriate health topics being incorporated within the respective special subjects. Wherever facilities exit, health should be included in the list of optional subjects offered. .

11) The draft syllabi on health education for the children of the age groups 6-11, 11-14 and 14-17 be prepared by the committee on health and nutrition education, constituted by the ministry of education should be adopted for health teaching in schools with slight modifications to suit local needs.

12) The schools health education (SHE) section in the central health education Bureau and the students' health education unit in SHEBs should be developed to provide leadership in different aspects of school health education.

Regional office for south East Asia, WHO, New Delhi has brought out a document based in the health Jamboree for secondary schools students of South-East Asian Region. Report of an inter-country meeting Feydhoo Finolhu Island, Maladives, 13-15 September, 2001, which deals with health promoting schools. It states,

Schools are strategies settings for providing students with educational qualifications and to improve their opportunities for employment fostering good health is equally important to help student lead socially and economically productive lives in the future. The objectives of the Jamboree are:

a) To explore the holistic concept of health

b) To share observations, experiences on prevalent health problems which they might have experiences as adolescents, as well as other public health problems in the communities

c) To discuss existing school health programmes in their respective countries and explore ways of involving themselves in the same

d) To develop strategies for better health a t various levels and

e) To understand the importance of diet and exercise in ensuring and promoting health and incorporating the same in their daily lives.

Jamboree Recommendation

There should not be too great a lapse of time between the planning and the implementation phases as some loss of continuity can occur.

The teachers/ officials should be oriented to their roles and responsibilities, so that they can be better involved.

Guidelines for presentation of school health programmes should be outlined at the time of sending the invitations, so that this session stays more focused and gives the necessary information.

The Jamboree could be extended to a period of five days, as the programme was very tight and many resource persons felt rushed and could not do justice to analyzing the processes involved.

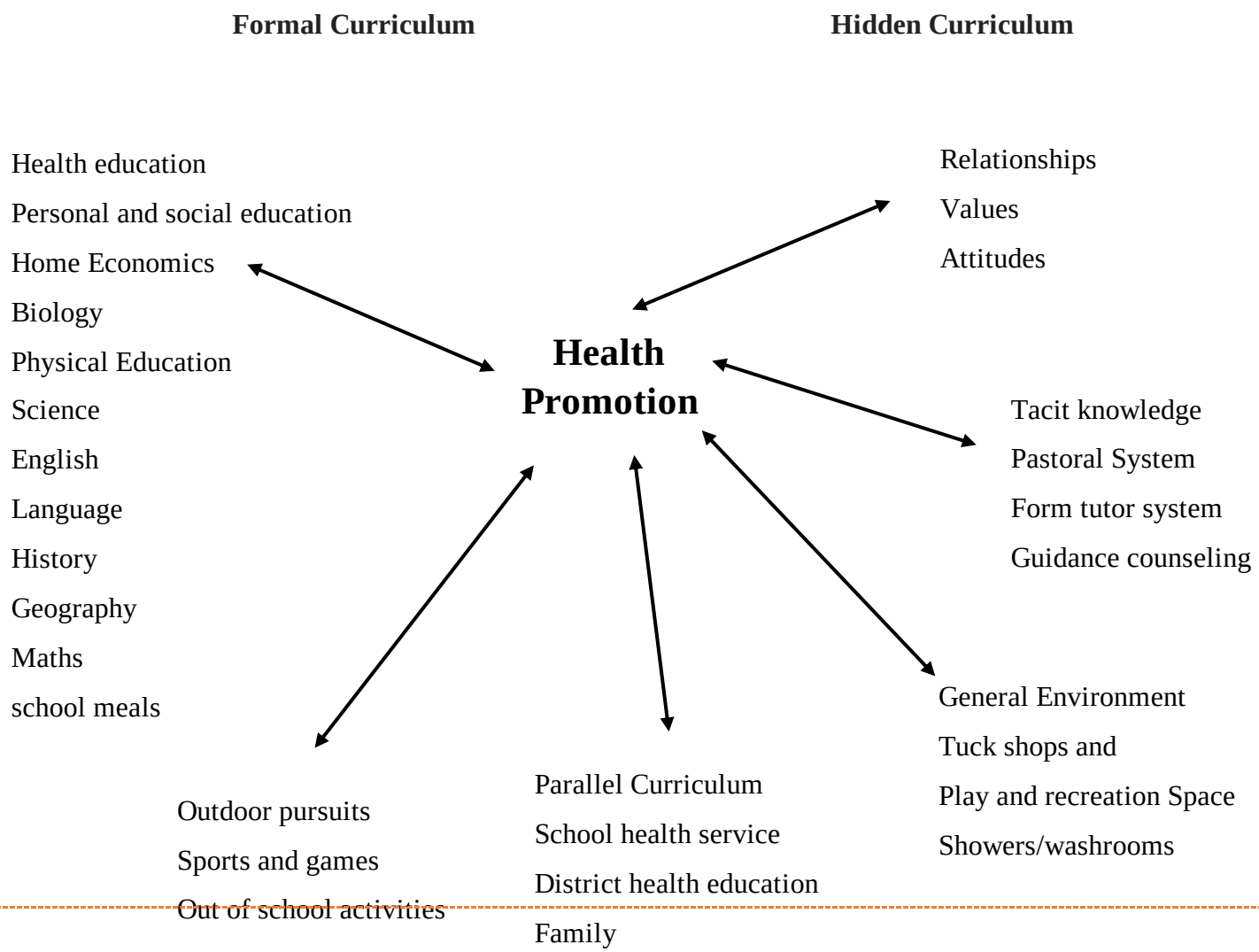
Linkages between the topics need to be established

More time could be given to sports, physical exercises and other leisure activities Though the food was very good, the needs of vegetarians could he better addressed. There is a need for training of resource persons.

Evaluation of School Health Education

In evaluating school health education we can focus on any, or all, of five distinct although everlapping and interesting levels.

1) Individual Pupil: Evaluation addresses learning outcomes of pupils achieved as the result of formal and informal health education activities the total school curriculum.



2) Individual school: health education of pupils occurs within the context of the school environment. A second level of evaluation appraises the individual school as a health promotion environment.

3) Community: Schools exists within communities. The immediate and longer-time effects of school health education on these communities can be assessed.

4) The school systems: while effective health education may be demonstrated in small scale studies with groups of pupils, or in individual schools as a whole, it is important to enquire about the extent to which the schools system as a whole in any country provides a satisfactory health education for all pupils.

5) National and local policy a variety of policies related to education and to health can have a bearing on the development of appropriate, and successful, health education is schools.

Methods of Education

There are number of ways in which health knowledge can be given and sound health attitudes and behaviour can be inculcated. The following are some of the methods to give health education to the students.

1. School health club
2. Demonstrations and practical work
3. Songs, stories, games and puzzles
4. Dramas, puppet shows and role play
5. Health parades, competitions, scrap books and diaries
6. Exhibitions and display boards
7. Talks, debates and discussions
8. Visual aids in Teaching
9. Involvement of parents
10. Child-to-child health activities.

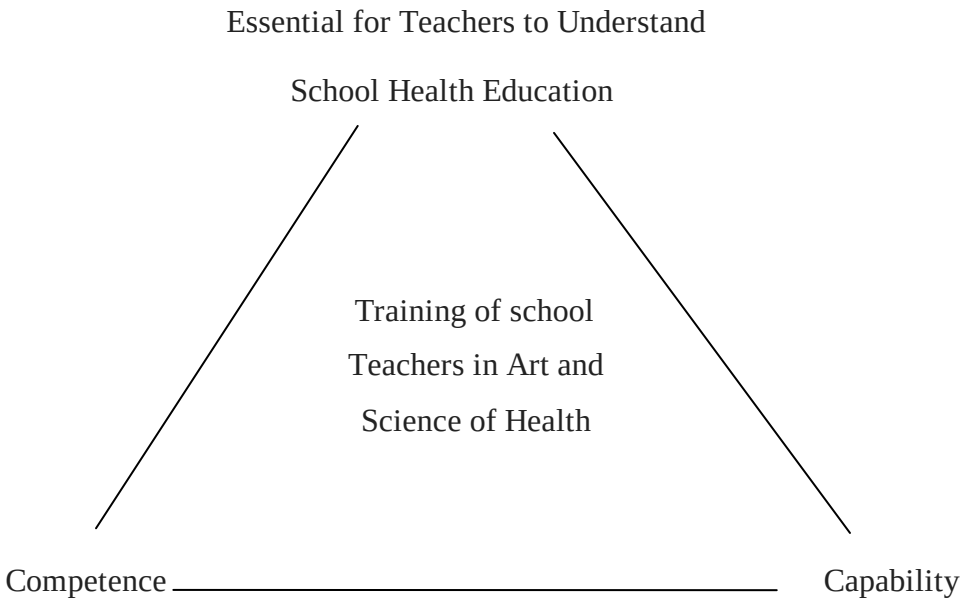
Teachers Role on Promoting Health Education

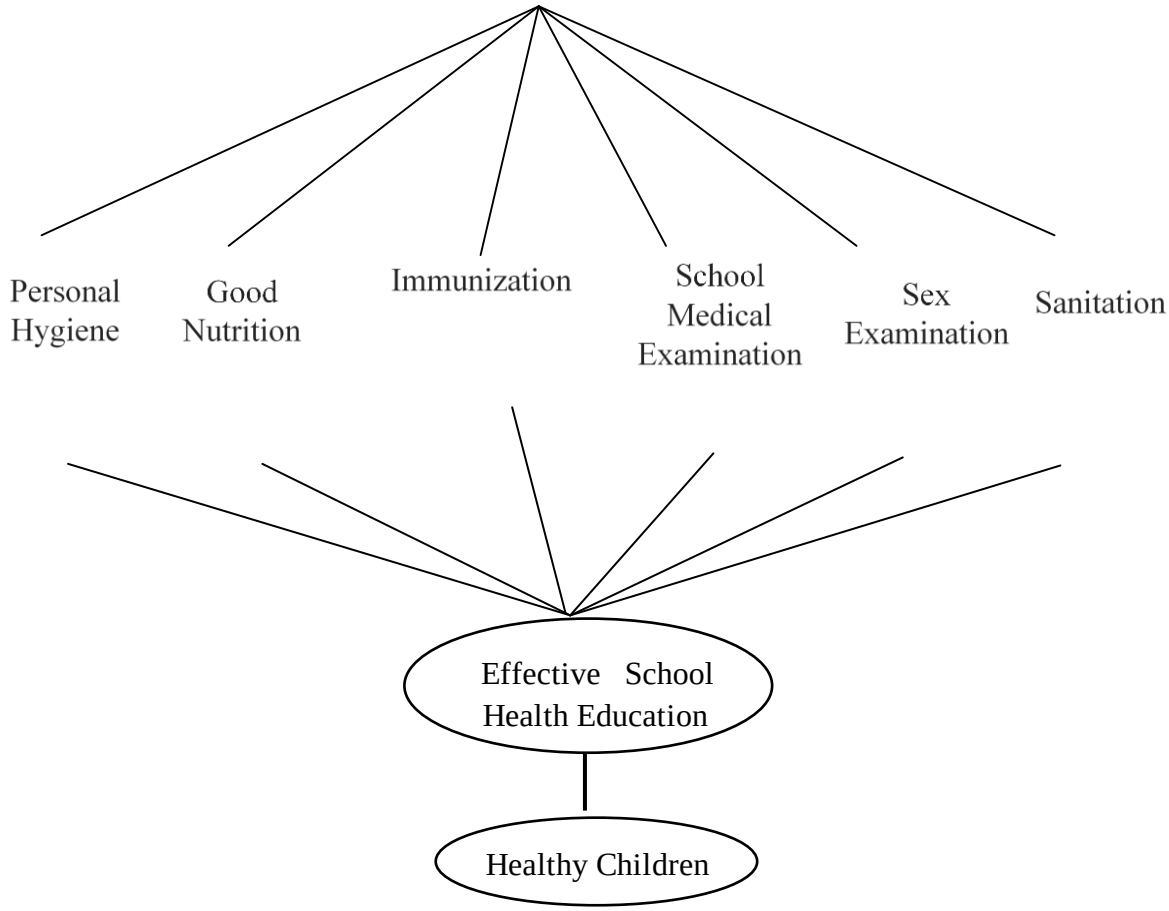
Teachers are not supposed merely to make their students literate but ensure on all round development of personality. Health is a very important component of his personality; therefore, teachers must be trained in the art and science of health education.

Responsibilities of Schools Teachers in the School Health Programme

1) Provision of health instruction of school children and promotion of healthful practices among them

a. Serve as a health counselor for the school children.
b. Identify the activities and situations that may jeopardize the health or safety of the school children and take the necessary steps to correct or improve the situation.
c. Observe the health practices of school children as regards personal hygiene, habits and posture, and encourage them to develop good health practices.
d. Encourage the students to help in maintaining a clean and safe school environment





e. Supervise food sanitation practices when food is prepared, procured, stored or served in the school and encourage children to develop healthful food habits.

f. Plan for health educational activities in the school based on the specific health needs, interests and practices of the students.

g. Involve the students in organizing health campaigns and health projects in the school and in the community

h.Plan with parents to develop a common health practice code to be followed both at school and in the home.

2)Detection of deviations from normal health, provision of first-aid in accidents. and referral of children to the medical officer, PHC/ Hospital

a. Observe students for detects and deviations from normal health and refer them for examination and treatment to the PHC.
b. Observe students for signs and symptoms of communicable diseases, arrange for their leave from school and inform the health worker/ health assistant /MO PHC of the nearest sub-centre/PHC.
c. Give simple treatment for minor ailments.

d. Provide first-aid in the case of accidents and arrange for transfer of those in need of special care to the PHC/hospital.

3)Assistance in Health Check-up and Immunization of School Children

a. Prepare the list of new entrants for health check-up and for immunization.
b. Prepare the students for medical examination and immunization and inform the parents about the programme.
c. Take the height, weight, and chest measurement of the children
d. Encourage the parents to ensure that any defects detected in their children are corrected and that their children are given regular and complete treatment for any disease detected in them
e. Coordinate with parents for referral and follow-up of cases in whom defects or deviations from health are detected.
f. Arrange parent-teacher meetings at regular intervals to discuss educational and health problems of children and measures to be taken to solve these problems.
g. Assist in the rehabilitation of students who have recovered from illness or defects.

4)Maintenance of Health Records of School Children

a. Complete the relevant portions of the individuals student's health record
b. Make entries about the treatment for minor ailments provided to them in the school
c. When a student is referred to the PHC/hospital fill in the referral on the students health record card, which should be returned to you after treatment.

FIRST AID

What is first aid?

First aid is the initial assistance or care of a **suddenly sick or injured person**. It is the care administered by a person as soon as possible after an accident or illness. It is the prompt care and attention prior to the arrival of the ambulance that sometimes means the difference between life and death, or between a full or partial recovery.

The **main aims** of first aid are:

These aims are known as the three P's of first aid.

- To **preserve** life

- To **protect** the casualty from further harm
- To **promote** recovery

Principal Procedures of First Aid Immediate action

As in most endeavours, the principle to be adopted in first aid is immediate action. Bystanders or relatives not knowing what to do, or being too timid to try, may have unwittingly contributed to unnecessary deaths and chronic injuries. If a person is sick or injured, then they need help, and they need it immediately.

Quick action is necessary to preserve life and limb. A casualty who is not breathing effectively, or is bleeding heavily, requires immediate assistance. If quick effective first aid is provided, then the casualty has a much better chance of a good recovery.

It is important that quick action does not lead to panic, and the first aider should form a plan of action. Careful and deliberate action undertaken without too much delay is most beneficial to the casualty. Try to remain calm and think your actions through. A calm and controlled first aider will give everyone confidence that the event is being handled efficiently and effectively.

Each emergency is different so it is impossible to provide you with a precise list of things you need to do for every emergency. However, if you follow the 'principles of first aid' as outlined in this post you should deliver appropriate care, even if you are not sure of what the underlying problem is.

Calling for medical assistance

In India, to get help in emergency dial 100, 101, and 109 for police, fire service and medical emergency respectively. 999/911 can be dial free from any phone, fixed or mobile. You can also use 112 anywhere in the European Community to contact emergency services.

In the workplace there may be an internal number to call in an emergency which should be clearly displayed on or around the telephone.

In many countries, motorways have emergency phones that can be found every so often on the hard shoulder or in emergency refuge areas. These are linked to motorway control centres, allowing them to pinpoint your position and get help to you quickly.

If you are attending to a casualty, get a bystander to telephone for help. If you are on your own you may have to leave the casualty momentarily to make a call. The specific circumstance surrounding the incident will dictate whether you call for help, or whether you send a bystander.

You should instruct the bystander to give some basic information to the operator, and get them to repeat it back to ensure that the correct information is understood. You should also request the bystander return once they have called for help, as this will confirm that the call has been made, and will give you additional assistance should you need to update the emergency services if the condition of the casualty worsens.

There are 3 important things to remember when calling for help:

1. State which emergency service you want, eg. Ambulance, Coastguard, Rescue, Fire, or Police.
2. Stay on the line until connected with the emergency service operator as they will need to talk to you before sending assistance.
3. Give as much information as you can about the emergency, including:
    - exact address on location
    - any landmarks
    - distance from town or landmark
    - caller's name
    - phone number from where the call is being made
    - what happened – eg. car accident
    - number and condition of the casualties.

Medical alert devices

Some individuals suffer from certain medical conditions that may cause them to present with serious signs and symptoms at any time. As a form of assistance and notification, these people may wear a form of medical identification, usually a special bracelet, necklace, or carry a wallet card. These warning devices are referred to as medical alert devices and are commonly known as 'Medic-alert' and 'SOS Talisman'.

They are imprinted with the person's identity, the relevant medical condition, and other details which may include allergies, drugs required, or specialized medical contact. Medical conditions that may be notified vary from specific heart diseases, to diabetes, epilepsy, asthma, and serious allergies.

Reassurance and mental health

The psychological value of reassurance is as important as the treatment that you give. Comfort and reassure the casualty, as in some cases all the casualty needs is emotional support and reassurance. A calm approach by the first aider and keeping the casualty informed of what is happening will also assist in the reassurance process.

Remember that many people who have assisted you in delivering care to an injured or ill casualty may need reassurance themselves. Relatives of the casualty may be concerned that they let the casualty down or that they made a mistake in not getting help earlier; workmates may feel that they contributed little to helping the casualty; onlookers may feel guilty that they provided only a little practical assistance. Take some time out at the end of the incident to tell people how important their contribution was. Let them know that effectively caring for a casualty is a team effort and that every little job counts.
This is especially true if the outcome of the emergency was unsuccessful.

Response to an emergency

An emergency of any size can cause unusual stress in people who have been directly and indirectly affected by it. Every person will react differently and a range of responses to an emergency is normal, and to be expected. Emotional responses to disasters can appear immediately or sometimes months later. Understanding what you're feeling and taking positive steps can help you cope with this disaster. Some common responses to emergencies and disasters are:

- Crying for "no apparent reason"
- Difficulty making decisions and sleeping
- Disbelief, shock, irritability and anger
- Disorientation, apathy and emotional numbing
- Excessive drinking or drug use
- Fear and anxiety about the future
- Feeling powerless, sad and depressed
- Flashbacks
- Headaches and stomach problems

If you have strong feelings that won't go away or if you are troubled for longer than four to six weeks, you may want to seek professional help.

Debriefing

After an incident it is important to put some time aside for yourself. Very often first aiders become concerned that they did not do a good enough job, and that they were not effective in their role. When you think about how you handled the incident, the first thing you should keep in mind is that by stepping forward and doing first aid you have done more for the casualty that anyone else could ever do. As the great humanitarian Albert Schweitzer said, "The purpose of life is to serve and show compassion and the will to help others."

In dealing with this, go and get a cup of tea and talk to a family member, friend or colleague. When you go over how you handled the incident, be realistic about your expectations.

Time must also be allocated to the cleanup of the scene and equipment, and to restock your first aid kit.

You should:

- Take a breath
- take a break
- talk about the incident with peers
- try to relax as much as possible
- clean up the scene
- clean any equipment
- used restock your first aid kit
- replace all items used
- look for any soiled unopened items that will need to be replaced
- complete any documentation.

Benefits of First Aid

There will be a time in your life when you wish you had a first aid kit close by. A famous last word from a company, who markets these items all over the United States, but it's true. We hear stories all the time about people who get injured and didn't have a first aid kit. We believe so strongly about this issue we've listed 10 great reasons why you need a first aid kit. Here is why it's time to get your first aid kit now.

1. **Response when there is no responder** - There is never a good place to get hurt but when help is out of reach, a first aid kit is your next best friend. You can't always count on others to help so be prepared.

2. **We only have so much blood** - Scary but true. If your injury involves blood-loss, you only have precious seconds to get the necessary supplies to stop the bleeding. Keeping a first aid kit close by can provide the extra time you need to seek help.
3. **Kids will be kids** - You can count on kids getting hurt. Lack of experience or just plain recklessness all add up to someone getting hurt. Cuts, scrapes and burns are common injuries to expect so prepare a first aid kit with the appropriate supplies.
4. **Liability** - nobody wants to think about being sued. Businesses are required by law to keep first aid supplies readily available when there is no first response within 10 minutes. Be sure your first aid kit is stocked with the required ANSI first aid items.
5. **Protect your employees or people you care about** - When an injury occurs, a stocked first aid kit can save someone's life. Think about others who are risking injury while on the job and do the right thing. Let everyone know you have a stocked first aid kit ready to use and tell them where it is in case an accident occurs.
6. **Cost savings** - It is cheaper to clean a cut and put on a bandage than it is to travel to a clinic and seek first aid. First aid kits are designed to manage all types of injuries including basic cuts, scrapes and burns. Save yourself money and keep a stocked first aid kit close by.
7. **Accidents are unexpected** - Being prepared can reduce panic and provide the necessary aid. Always check your inventory monthly to make sure your first aid kit is ready to use when the unexpected takes place.
8. **Time is of the essence** - A first aid kit is just that; "First Aid". Having one ready provides temporary aid until you can get help. No kit means no immediate help. Precious time to respond can mean further injury, life or death.
9. **Small injuries can become big injuries** - The longer you wait for treatment, the more severe your injury can become. Immediate treatment can reduce risk.
10. **Peace of mind** - Being prepared, doing the right thing and even being able to help others when injury occurs is reason enough to want a first aid kit close by.

Whether you are thinking about a small first aid kit for your car or something more substantial for work, take a look at over 160 different first aid kits we stock get the best first aid kit for your needs. You'll feel better knowing you will help somebody in need.

SUMMARY

Health is the greatest blessing of all. Health education it an activity which promotes health related learning. The preventive model, radical-political model and self-empowerment model are the three major

approaches to health education. Increase understanding, skills of individuals to maintain and improve the health of their families and communities are the major goals of health education. Health education in school should not be considered as the sole responsibility of a single teacher. It should be shared by all teachers. Government of India (1961) Report of the School Education, and the National Policy on Education (1986) has emphasized the need for the overall development of the young child. School health club, songs, drama, health parades and exhibitions are the ways in which health nowledge can be given to the children. Teachers are having responsibility to mould the child's ersonality. Personal hygiene is concerned with hygiene of individual. Community hygiene deals with the hygiene of an organized group of individuals. There is a interrelationship between personal hygiene and national health.

UNIT: III COMMUNICABLE DISEASES AND LIFE STYLE DISORDER

INTRODUCTION

We know that several types of diseases exist in the world. They can be as dangerous as cancer, diabetes,tuberculosis, pneumonia and mental retardation, whereas, on the other hand, they can be as simple as mild fever and stomach ache. Communicable diseases can be spread through bodily fluids, contaminated surfaces, air or food. Some spread during particular seasons, and others may be prevalent year-round in certain locations.Communicable diseases have a variety of symptoms and can be caused by bacteria, viruses or parasites.

MEANING

A communicable disease is one that is spread from one person to another through a variety of ways that include: contact with blood and bodily fluids; breathing in an airborne virus; or by being bitten by an insect. Reporting of cases of communicable disease is important in the planning and evaluation of disease prevention and control programs, in the assurance of appropriate medical therapy, and in the detection of common-source outbreaks. California law mandates healthcare providers and laboratories to report over 80 diseases or conditions to their local health department. Some examples of the reportable communicable diseases include Hepatitis A, B & C, influenza, measles, and salmonella and other food borne illnesses.

HOW DO THESE COMMUNICABLE DISEASES SPREAD?

How these diseases spread depends on the specific disease or infectious agent. Some ways in which communicable diseases spread are by:

1. physical contact with an infected person, such as through touch (staphylococcus), sexual intercourse (gonorrhea, HIV), fecal/oral transmission (hepatitis A), or droplets (influenza, TB)
2. contact with a contaminated surface or object (Norwalk virus), food (salmonella, E. coli), blood (HIV, hepatitis B), or water (cholera)
3. bites from insects or animals capable of transmitting the disease (mosquito: malaria and yellow fever; flea: plague); and
4. travel through the air, such as tuberculosis or measles.

TYPES OF COMMUNICABLE DISEASES

1. Malaria
2. Typhoid
3. Tuberculosis
4. Cholera
5. Diarrhoea and Aids

Malaria

Malaria is a mosquito-borne infectious disease affecting humans and other animals caused by parasitic protozoan's (a group of single-celled microorganisms) belonging to the Plasmodium type Malaria comes from "mal" and "aria," which means "bad air." Before the parasite that caused malaria was discovered, people thought the disease was caused by foul air, and associated it with marshes and low-lying swamps. They were not 100% wrong those areas are perfect breeding grounds for the mosquitoes which transmit malaria, and so infection often occurs in and around these areas.

Symptoms of malaria

Generally the symptoms of malaria remain same for all. But there are cases in which the patent does not show any symptoms of malaria for several months. Knowing the early **symptoms of malaria** fever helps in early diagnosis to save life as well to control spread. Malaria is a dangerous life threatening fever. It is transmitted through female Anopheles mosquitoes. The disease causing microbe is Plasmodium. The fever develops in an individual with in 10 to 14 days after being bitten by infected mosquito.

Common symptoms of malaria include:

- High fever
- Moderate to severe shaking chills
- Fatigue
- Body aches
- Profuse sweating
- Headache
- Muscle pain
- Nausea
- Vomiting
- Abdominal pain
- Diarrhoea
- Blood in stools
- Anemia
- Convulsions and
- Coma

Symptoms of malaria in children

Early symptoms of malaria start with drowsiness, irritability, poor appetite and trouble sleeping in children. Gradually the other symptoms of malaria appear in children like;

- Chills
- Recurring fever above 40.6 ^{0}c or 105^{0}F
- Rapid breathing
- Profuse
- sweating

Types of malaria

There are four types of malaria. They are caused by four types of Plasmodium parasites like;

- Plasmodium falciparum
- Plasmodium vivax
- Plasmodium ovale and
- Plasmodium malaria.

Most common type of malaria

Malaria fever caused by Plasmodium falciparum is the most common one. It causes severe form of malaria. In addition to the general **symptoms of malaria** patient may experience severe complications like;

- Severe anemia due to destruction of blood cells
- Yellowish skin discoloration
- Kidney failure
- Fluid in the lungs
- Swelling of blood vessels in the brain
- Convulsions
- Coma
- Death

PREVENTIVE MEDICINE FOR MALARIA

Anti-malarial drugs are available and they are found very effective. One should stick on the instruction while having the medicine, regarding its dosage and prescribed duration. People returning from the malaria prone areas should continue the medicine for 1 to 4 weeks to ensure the complete elimination of pathogens.

Prevention of malaria

First and foremost step is to prevent mosquito bite

Clothing: Use protective clothing like pants and long sleeved shirts.

Mosquito repellents: Use mosquito repellents helps in protecting from bites.

Mosquito nets: Use of mosquito nets should be encouraged as a best preventive measure for malaria.

Insecticides: Spray flying insecticides indoors as well as around the house to prevent mosquitoes.

Stay inside the room: Try to stay inside the room when it is dark, preferably in a screened or airconditioned room.

Prevent breeding of mosquitoes: Take measures to prevent breeding of mosquitoes like spraying insecticides to stagnant water.

Regular fumigation: It is a very effective measure to control mosquitoes.

Antimalarial drugs: Travelers should take anti-malarial drugs before going to malaria prone areas

As the travelers are susceptible to **symptoms of malaria**, they should take necessary steps to prevent the spread of the disease once they are back at home.

Typhoid

Typhoid is a bacterial infection that can lead to a high fever, diarrhea, and vomiting. It can be fatal. It is caused by the bacteria Salmonella typhi. The infection is often passed on through contaminated food and drinking water, and it is more prevalent in places where hand washing is less frequent. It can also be passed on by carriers who do not know they carry the bacteria. If typhoid is caught early, it can be successfully treated with antibiotics; if it is not treated, typhoid can be spread over.

Meaning

Typhoid is an infection caused by Salmonella typhimurium bacteria that is spread from human to human. Typhoid is an infection caused by the bacterium Salmonella typhimuriu. The bacterium lives in the intestines and bloodstream of humans. It spreads between individuals by direct contact with the feces of an infected person. No animals carry this disease, so transmission is always human to human. If untreated, around 1 in 5 cases of typhoid can be fatal. With treatment, fewer than 4 in 100 cases are fatal. S. typhi enters through the mouth and spends 1 to 3 weeks in the intestine. After this, it makes its way through the intestinal wall and into the bloodstream. From the bloodstream, it spreads into other tissues and organs. The immune system of the host can do little to fight back because S. typhi can live within the host's cells, safe from the immune system. Typhoid is diagnosed by detecting the presence of S. typhi via blood, stool, urine, or bone marrow sample.

Fast facts on typhoid

- Typhoid is a common bacterial infection in countries with low incomes.
- Untreated, it is fatal in around 25 percent of cases.
- Symptoms include a high fever and gastrointestinal problems.
- Some people carry the bacteria without developing symptoms
- Most cases reported in the United States are contracted overseas
- The only treatment for typhoid is antibiotics

Symptoms

Symptoms normally begin between 6 and 30 days after exposure to the bacteria. The two major symptoms of typhoid are fever and rash. Typhoid fever is particularly high, gradually increasing over several days up to 104 degrees Fahrenheit, or 39 to 40 degrees Celsius. The rash, which does not affect every patient, consists of rose-colored spots, particularly on the neck and abdomen.

Other symptoms can include:

- weakness
- abdominal pain
- constipation
- headaches

Rarely, symptoms might include confusion, diarrhea, and vomiting, but this is not normally severe. In serious, untreated cases, the bowel can become perforated. This can lead to peritonitis, an infection of the tissue that lines the inside of the abdomen, which has been reported as fatal in between 5 and 62 percent of cases. Another infection, paratyphoid, is caused by Salmonella enteric. It has similar symptoms to typhoid, but it is less likely to be fatal. The only effective treatment for typhoid is antibiotics. The most commonly used are ciprofloxacin (for non-pregnant adults) and ceftriaxone. Other than antibiotics, it is important to rehydrate by drinking adequate water. In more severe cases, where the bowel has become perforated, surgery may be required.

Causes

Typhoid is caused by the bacteria S. typhi and spread through food, drinks, and drinking water that are contaminated with infected fecal matter. Washing fruit and vegetables can spread it, if contaminated water is used. Some people are symptomatic carriers of typhoid, meaning that they harbor the bacteria but suffer no ill effects. Others continue to harbor the bacteria after their symptoms have gone. Sometimes, the disease can appear again. People who test positive as carriers may not be allowed to work with children or older people until medical tests show that they are clear.

Signs and symptoms

Rose spots on abdomen of a person with typhoid fever classically; the course of untreated typhoid fever is divided into four distinct stages, each lasting about a week. Over the course of these stages, the patient becomes exhausted and emaciated.

- In the first week, the body temperature rises slowly, and fever fluctuations are seen with relative bradycardia (Faget sign), malaise, headache, and cough. A bloody nose (epistaxis) is seen in a quarter of cases, and abdominal pain is also possible. A decrease in the number of circulating white blood cells (leukopenia) occurs with eosinopenia and relative lymphocytosis; blood cultures are positive for Salmonella Typhi or S. paratyphi. The Widal test is usually negative in the first week.
- In the second week, the person is often too tired to get up, with high fever in plateau around 40 °C (104 °F) and bradycardia (sphygmothermic dissociation or Faget sign), classically with a dicrotic pulse wave. Delirium is frequent, often calm, but sometimes agitated. This delirium gives to typhoid the nickname of "nervous fever". Rose spots appear on the lower chest and abdomen in around a third of patients. Rhonchi are heard in lung bases.

- The abdomen is distended and painful in the right lower quadrant, where borborygmi can be heard. Diarrhea can occur in this stage: six to eight stools in a day, green, comparable to pea soup, with a characteristic smell. However, constipation is also frequent. The spleen and liver are enlarged and tender, and liver transaminases are elevated. The Widal test is strongly positive, with antiO and antiH antibodies. Blood cultures are sometimes still positive at this stage.

In the third week of typhoid fever, a number of complications can occur:

- Intestinal haemorrhage due to bleeding in congested Peyer's patches; this can be very serious, but
- is usually not fatal.
- Intestinal perforation in the distal ileum: this is a very serious complication and is frequently fatal. It may occur without alarming symptoms until septicaemia or diffuse peritonitis sets in
- Encephalitis
- Respiratory diseases such as pneumonia and acute bronchitis
- Neuropsychiatric symptoms (described as "muttering delirium" or "coma vigil"), with picking at bedclothes or imaginary objects.
- Metastatic abscesses, cholecystitis, endocarditis, and osteitis
- The fever is still very high and oscillates very little over 24 hours. Dehydration ensues, and the patient is delirious (typhoid state). One-third of affected individuals develop a macular rash on the trunk.
- Platelet count goes down slowly and risk of bleeding rises.
- By the end of third week, the fever starts subsiding

PREVENTION

Countries with less access to clean water and washing facilities typically have a higher number of typhoid cases.

Vaccination

If traveling to an area where typhoid is prevalent, vaccination is recommended.

Before traveling to a high-risk area, getting vaccinated against typhoid fever is recommended.

This can be achieved by oral medication or a one-off injection:

- Oral: a live, attenuated vaccine. Consists of 4 tablets, one to be taken every second day, the last of which is taken 1 week before travel.
- Shot, an inactivated vaccine, administered 2 weeks before travel.
- Vaccines are not 100 percent effective and caution should still be exercised when eating and drinking.
- Vaccination should not be started if the individual is currently ill or if they are under 6 years of age. Anyone with HIV should not take the live, oral dose.

The vaccine may have adverse effects. One in 100 people will experience a fever. After the oral vaccine, there may be gastrointestinal problems, nausea, and headache. However, severe side effects are rare with either vaccine. There are two types of typhoid vaccine available, but a more powerful vaccine is still needed. The live, oral version of the vaccine is the stronger of the two. After 3 years, it still protects individuals from infection 73 percent of the time. However, this vaccine has more side effects. The current vaccines are not always effective, and because typhoid is so prevalent in poorer countries, more research needs to be done to find better ways of preventing its spread.

Typhoid is spread by contact and ingestion of infected human feces. This can happen through an infected water source or when handling food. The following are some general rules to follow when traveling to help minimize the chance of typhoid infection:

- Drink bottled water, preferably carbonated.
- If bottled water cannot be sourced, ensure water is heated on a rolling boil for at least one minute before consuming."
- Be wary of eating anything that has been handled by someone else.
- Avoid eating at street food stands, and only eat food that is still hot.
- Do not have ice in drinks.
- Avoid raw fruit and vegetables, peel fruit yourself, and do not eat the peel.

TUBERCULOSIS

Tuberous sclerosis complex (TSC) is a rare multisystem genetic disease that causes benign tumors to grow in the brain and on other vital organs such as the kidneys, heart, liver, eyes, lungs, and skin. TB usually affects the lungs, although it can spread to other organs around the body. Doctors make a distinction between two kinds of tuberculosis infection: latent and active.

Latent TB - the bacteria remain in the body in an inactive state. They cause no symptoms and are not contagious, but they can become active.

Active TB - the bacteria do cause symptoms and can be transmitted to others.

About one-third of the world's population is believed to have latent TB. There is a 10 percent chance of latent TB becoming active, but this risk is much higher in people who have compromised immune systems, i.e., people living with HIV or malnutrition, or people who smoke. TB affects all age groups and all parts of the world. However, the disease mostly affects young adults and people living in developing countries. In 2012, 80 percent of reported TB cases occurred in just 22 countries.

Symptoms of tuberculosis

While latent TB is symptomless, the symptoms of active TB include the following:

- Coughing, sometimes with mucus or blood
- Chills
- Fatigue
- Fever
- Loss of weight
- Loss of appetite and
- Night sweats
- Skin abnormalities
- Seizures
- Cognitive disabilities
- Behavioral problems
- Kidney problems
- Heart issues
- Lung problems
- Eye abnormalities

Tuberculosis usually affects the lungs, but can also affect other parts of the body. When TB occurs outside of the lungs, the symptoms vary accordingly. Without treatment, TB can spread to other parts of the body through the bloodstream:

- TB infecting the bones can lead to spinal pain and joint destruction
- TB infecting the brain can cause meningitis
- TB infecting the liver and kidneys can impair their waste filtration functions and lead to blood in the urine
- TB infecting the heart can impair the heart's ability to pump blood, resulting in a condition called cardiac tapenade that can be fatal

Diagnosis of tuberculosis

TB is most commonly diagnosed via a skin test involving an injection in the forearm. To check for TB, a doctor will use a stethoscope to listen to the lungs and check for swelling in the lymph nodes. They will also ask about symptoms and medical history as well as assessing the individual's risk of exposure to TB. The most common diagnostic test for TB is a skin test where a small injection of PPD tuberculin, an extract of the TB bacterium, is made just below the inside forearm. The injection site should be checked after 2-3 days, and, if a hard, red bump has swollen up to a specific size, then it is likely that TB is present. Unfortunately, the skin test is not 100 percent accurate and has been known to give incorrect positive and negative readings. However, there are other tests that are available to diagnose TB. Blood tests, chest X-rays and sputum tests can all be used to test for the presence of TB bacteria and may be used alongside a skin test. MDR-TB is more difficult to diagnose than regular TB. It is also difficult to diagnose regular TB in children.

Treatments for Tuberculosis

The majority of TB cases can be cured when the right medication is available and administered correctly. The precise type and length of antibiotic treatment depend on a person's age, overall health, potential resistance to drugs, whether the TB is latent or active, and the location of infection. People with latent TB may need just one kind of TB antibiotics, whereas people with active TB (particularly MDR-TB) will often require a prescription of multiple drugs. Antibiotics are usually required to be taken for a relatively long time. The standard length of time for a course of TB antibiotics is about 6 months. TB medication can be toxic to the liver, and although side effects are uncommon, when they do occur, they can be quite serious. Potential side effects should be reported to a doctor and include:

- Dark urine
- Fever
- Jaundice
- Loss of appetite and
- Nausea and vomiting

It is important for any course of treatment to be completed fully, even if the TB symptoms have gone away. Any bacteria that have survived the treatment could become resistant to the medication that has been

prescribed and could lead to developing MDR-TB in the future. Directly observed therapy (DOT) may be recommended. This involves a healthcare worker administering the TB medication to ensure that the course of treatment is completed.

Causes

The Mycobacterium tuberculosis bacterium causes TB. It is spread through the air when a person with TB (whose lungs are affected) coughs, sneezes, spits, laughs, or talks. TB is contagious, but it is not easy to catch. The chances of catching TB from someone you live or work with are much higher than from a stranger. Most people with active TB who have received appropriate treatment for at least 2 weeks are no longer contagious. Since antibiotics began to be used to fight TB, some strains have become resistant to drugs. Multidrug-resistant TB (MDR-TB) arises when an antibiotic fails to kill all of the bacteria, with the surviving bacteria developing resistance to that antibiotic and often others at the same time. MDR-TB is treatable and curable only with the use of very specific anti-TB drugs, which are often limited or not readily available. In 2012, around 450,000 people developed MDR-TB.

Prevention of Tuberculosis

If you have active TB, a face mask can help lower the risk of the disease spreading to other people. A few general measures can be taken to prevent the spread of active TB. Avoiding other people, by not going to school or work, or sleeping in the same room as someone, will help to minimize the risk of germs from reaching anyone else. Wearing a mask, covering the mouth, and ventilating rooms can also limit the spread of bacteria.

CHOLERA

Cholera is an acute epidemic infectious disease. It is characterized by watery diarrhea, extreme loss of fluid and electrolytes, and severe dehydration. It can be fatal.

Symptoms

Only around 1 in 20 cholera infections are severe, and a high percentage of infected people show no symptoms. If symptoms appear, they will do so between 12 hours and 5 days after exposure. They range from mild or asymptomatic to severe.

They typically include:

- large volumes of explosive watery diarrhea, sometimes called "rice water stools" because it can look like water that has been used to wash rice
- vomiting leg cramps
- A person with cholera can quickly lose fluids, up to 20 liters a day, so severe dehydration and shock can occur.
- Signs of dehydration include:
- loose skin

- sunken eyes
- dry mouth
- decreased secretion, for example, less sweating
- fast heart beat
- low blood pressure
- dizziness or lightheadedness
- rapid weight loss
- Shock can lead to collapse of the circulatory system. It is a life-threatening condition and a medical emergency.

Causes

Cholera is more common where there is overcrowding and poor sanitation. Cholera bacteria enter the body through the mouth, often in food or water that has been contaminated with human waste, due to poor sanitation and hygiene. They can also enter by eating seafood that is raw or not completely cooked, in particular shellfish native to estuary environments, such as oysters or crabs. Poorly cleaned vegetables irrigated by contaminated water sources are another common source of infection. In situations where sanitation is severely challenged, such as in refugee camps or communities with highly limited water resources, a single affected victim can contaminate all the water for an entire population.

Treatment

It is normally dehydration that leads to death from cholera, so the most important treatment is to give oral hydration solution (ORS), also known as oral rehydration therapy (ORT). The treatment consists of large volumes of water mixed with a blend of sugar and salts. Prepackaged mixtures are commercially available, but widespread distribution in developing countries is limited by cost, so homemade ORS recipes are often used, with common household ingredients. Severe cases of cholera require intravenous fluid replacement. An adult weighing 70 kilograms will need at least 7 liters of intravenous fluids. Antibiotics can shorten the duration of the illness, but the WHO does not recommend the mass use of antibiotics for cholera, because of the growing risk of bacterial resistance. Anti-diarrheal medicines are not used because they prevent the bacteria from being flushed out of the body. With proper care and treatment, the fatality rate should be around 1percent.

Cholera vaccine

There are currently three cholera vaccines recommended by the World Health Organization (WHO). These are Dukoral, Shanchol, and Euvichol. All three require two doses to give full protection. Dukoral needs to be taken with clean water, and it provides roughly 65 percent protections for 2 years. Shanchol and Euvichol do not need to be taken with water, and they provide 65 percent protection for 5 years. All the vaccines offer higher protection nearer to the time they are given.

DIARRHEA

Diarrhea refers to watery stools, but it may be accompanied by other symptoms. Diarrhea occurs when a person suffers from repeated bowel movements which are loose and watery. It's a very common condition and is not considered to be serious. Many people get diarrhea once or twice each year. It normally lasts 2 to 3 days, and you can treat it with over-the-counter medicines

Symptoms are Associated with Diarrhea

The symptoms that are associated with diarrhea depend on the cause and type of diarrhea.

- If there is a large secretary component to the diarrhea the bowel movements are frequent and watery. Pain is not common, and there are no signs of inflammation.
- Similarly, an osmotic diarrhea is watery, but its main characteristic is that once ingestion of food stops (which would include the offending dietary food or substance that is not digested or absorbed) the diarrhea stops.
- Motility related diarrhea is more likely to be associated with cramping abdominal pain.
- Inflammatory diarrhea often is associated with crampy abdominal pain as well as signs of inflammation, for example, fever, and abdominal tenderness. It also may be associated with intestinal bleeding, either with visible blood in the stool or invisible blood that only is detected by testing the stool for blood.
- Although one might expect the diarrhea of collagenous colitis to be painless, in fact, it is frequently associated with abdominal pain, suggesting that there is more to collagenous colitis than a failure to absorb fluid and electrolytes.
- Blood or pus in the stools
- Persistent vomiting
- Dehydration.
- If these accompany diarrhea, or if the diarrhea is chronic, it may indicate a more serious illness.

Causes of Diarrhea

Usually, diarrhea is caused by a virus that infects your gut. Diarrhea is also known as intestinal flu or stomach flu.

Some common causes of diarrhea include:

- contaminated food
- alcohol abuse
- diseases of the intestines (such as Crohn's disease or ulcerative colitis)
- eating foods that upset the digestive system
- infection by bacteria (the cause of most types of food poisoning) or other organisms

- laxative abuse
- medications
- allergies to certain foods
- Diabetes Mellitus Type 2
- overactive thyroid (hyperthyroidism)
- radiation therapy
- some cancers
- undergoing any surgery related to the digestive system
- trouble absorbing certain nutrients also called “malabsorption”
- diarrhea may also follow constipation, especially for people who have irritable bowel syndrome (IBS)

Prevention

In developing countries, prevention of diarrhea may be more challenging due to dirty water and poor sanitation.

The following can help prevent diarrhea:

- clean and safe drinking water
- good sanitation systems, for example, waste water and sewage
- good hygiene practices, including hand washing with soap after defecation, after cleaning a child who has defecated, after disposing of a child's stool, before preparing food, and before eating .
- breastfeeding for the first 6 months of life
- education on the spread of infection

There is evidence that interventions from public health bodies to promote hand washing can cut diarrhea rates by about one-third. Diarrhea is an increase in the frequency of bowel movements or a decrease in the form of stool.

Although changes in frequency of bowel movements and looseness of stools can vary independently of each other, changes often occur in both. Diarrhea needs to be distinguished from four other conditions. Although these conditions may accompany diarrhea, they often have different causes and different treatments than diarrhea.

These other conditions are:

1. Incontinence of stool, which is the inability to control (delay) bowel movements until an appropriate time, for example, until one can get to the toilet
2. Rectal urgency, which is a sudden urge to have a bowel movement that is so strong that if a toilet is not immediately available there will be incontinence

3. Incomplete evacuation, which is a sensation that another bowel movement is necessary soon after a bowel movement, yet there is difficulty passing further stool the second time
4. Bowel movements immediately after eating a meal.

NON-COMMUNICABLE DISEAES

Pulse Polio Immunization (PPI)

For the eradication of poliomyelitis, Pulse Polio Immunization campaign was introduced in the year 1995-96, which along with efficient routine immunization coverage has successfully eliminated the dreaded disease from the state.

Japanese Encephalitis Vaccination

Japanese Encephalitis (JE) vaccination programme is being implemented to prevent Japanese Encephalitis. JE is a mosquito mission Indradhanash. The MHFW, Government launched mission Indradhanash in December 2014 as a special drive to vaccinate unvaccinated and partially vaccinated children below 2 years and pregnant women under universal immunization programme.

Swine Zoonotic viral disease the virus is maintained in animals, birds, pigs, particularly the birds belonging to family ardeide (eg.cattle egrets, pond herms, etc.) which act as the natural hosts pigs and wild birds in reservoirs' of infection and are called as amplifier hosts in the transmission cycle. The virus does not cause any disease among its natural hosts and transmission continues through mosquitoes primarily belonging to culex Vishnui sub group mosquitoes. Vector control mosquito is able to transmit JEvinas to a healthy person after biting an infected host with an incubation period ranging from 5 to 14 days. The children suffer the highest attack rate because of lack of cumulative immunity due to natural infections.

Introduction Measles Rubella Vaccine

As per the National Technical Advisory Group in Immunization (NTAGI) recommendation, MR Vaccination campaign has been conducted during the month of February, 2017 targeting all children aged 9 completed months to <5 years with a simultaneous switch from measles to MR vaccine in the National Immunization schedule once the campaign is completed.

National Vector Borne Disease Control Programme and Epidemic Control Activities.

Dengue

Though Tamil Nadu has been able to keep Dengue a viral disease with fever serotypes and spread by Aedes mosquito which breeds in clean water. In Tamil Nadu, or diagnetis of the disease, GOI has identified 30 Sentinel surveillance centres including medical college Hospitals , zonal entomiloogical teams, institute of vector control and zoonosis, housur and distrcp Head qualities Hospitals.

Chikungunya

Chikungunya is also viral disease spread by Aedes mosquitoes.

Zika virus

Zika Virus Disease (ZUD) in also a mosuuito- borne (Aedes)virus disease caused by zika virus. It presents as mild fever, headaches, arthralgia, myalgia, asthenia and non-paralent conjunctives, occurring about two to seven days after the bite of the infected mosquito.

Filaria

The national filarial control programme is under implementation in the Tamil Nadu from 1957 with current control activities being carried out in 43 urban areas and 25 control units and 44 night clinics are presently functioning. Government is providing financial assistance to the grade IV Filaria patients at the mate of Rs. 1000/- per month. Nearly 5654 patients have been benefited by this syndrome.

Leptospirosis

Leptospirosis is an important public health problem associated with significant morbidity and sometimes death also. It is a serious zoonotic disease which requires timely diagnosis, treatment and control measures.

Swine flu-AHINI Disease

Swine flu is one of the types of influenza fever. The first case of AHINI Swine flu was reported in man, 2009 in Mexico and spread over 214 countries throughout the world following which on 11 the June, 2009 WHO declared the spread of influenza AHINI as pandemic preventive steps taken by the State Government are issued below:

Awareness campaign

Medicines

The government of Tamil Nadu have stocked 16 lakh capsules of oseltamivir, 47 thousand bottles of oseltamivir syrub, 58 thousand NG5 masks and 15 lakh triple layer masks for namagement of swine flu in Tamil Nadu . The drugs are also made freely available to private sector whenever needed.

Vaccine Preventable

Vaccines

In 2016-17, 4,03,000 doses of swine flu vaccines has been purchased through TNMSC Ltd., to vaccinate the health functionaries who are involved in the swine flue treatment.

Personal Protective Equipment (PPE)

13,108 PPE kits were made available in all the HUDs to protect the health workers, who are involved in the swine flu treatment in the hospitals.

Non-communicable Diseases

Prevention, control and treatment

Cardio vascular diseases (CVD) Prevention, control programme from July 2012 March 2017 NCD Screaming was carried at from 4,12,54,261 individuals aged 30 years and above. Act of those people

38,59,179 were faced to be positive for hypertension. The identified hypertensive patients are being treated appropriately and nominated by follow –up for any complications due to hypertension.

Prevention and Treatment of Diabetes mellitus

From July 2012 to March 2017 out of 3,33,00,977 individuals seemed for Diabetes Mellitus, 14,15,288 individuals have been identified with the diseases and brought under treatment and follow up.

Prevention and Treatment of Cervical Cancer

From July, 2012 to March, 2017, NCD Screaming was carried out for 1, 39,91,751 women for cervical cancer of whom 4,34,096 were defected positive in the screaming test. They have been referred to tertiary care institution for conformation and further follow-up treatment as per protocol.

Prevention and Treatment Breast Cancer

From July, 2012 to March 2017, 1,71,52,133 women's were screamed for breast cancer , of whom 1,93,194 women were formed positive and referred to higher institution for further evaluation and follow-up as per protocol.

National Programmes

1. National Tobacco Control Programme

The National Tobacco Control Programme is implemented in Tamil Nadu in since 2003. The major components of the TCP includes improvement of tobacco control law, capacity building of various stake holders on tobacco control, raising awareness in school and colleges and declaration of tobacco free educational institutions, organizing mass IBC awareness copeigns and establishment of tobacco cessation centers. Tamil Nadu is the first state in India to collect maximum number of the amount from the vid of the cigarette and other tobacco products Act (COTPA) , 2003. From 2nd October, 2008 to 31 March 2017, 1,53,596 persons were found and a sum of Rs 2.01 crore has been collected from the violates of COPTA, 2003. In Tamil Nadu, 12,798 schools and 1,344 colleges were declared as "tobacco free educational institution" under certified criteria.

2.National Leprosy Eradication programme

The National Leprosy Eradication Programme (NLEP) is a controlling preferred health scheme of the ministry of health and family welfare, GOI

Milestones in NLEP

- **1955** – NLCP launched
- 1983 – NLEP launched
- 1983 - introduction of multi drug therapy (MDT)
- 2005 – Elimination Leprosy at National Level.

- 2012 – Special Action Plan for 209 High academic districts in 16 states/UT s

In for the NLEP was launched during the year 1954-55. The main objective of this scheme is to identity the cases early and one item completely.

Prabenu Rate of Leprosy	Year
118 per 10,000 Population	1983
1 per 10,000 Population	2005
0.41 per 10,000 Population	2017

At present 5,680 leprosy affected persons are receiving pension of Rs 1000/- per month other than those already aviating the pensions under OAP scheme.

National Iodine Deficiency Disorders Control Programme (NIDDCP)

This programme implemented as part of the national health mission. The important objectives and components of NIDDCP includes survey to assess the mequture of the Iodine Deficiency Disorders, supply of iodised salt in place of common salt, re after 5 years to assess the extent of Iodine Deficiency Disorders and the impact of iodized salt, laboratory monitoring of iodized salt and iodine excretion and Health education and publicity.

AIDS EDUCATION

Introduction

The major chronic problem facing by the world is AIDS (Acquired Immuno Deficiency syndrome). AIDS is a human viral disease that ravages the immune system, undermining the body's ability to defend itself from infection and disease caused by human immune deficiency virus (HIV), the virus that causes acquired immune deficiency syndrome.

Concept

AIDS was first identified in 1981 among homosexual men and intravenous drug users in New York and California. Shortly after its detection in the United States, evidence of AIDS epidemics grew among heterosexual men, women and children in sub-saharan Africa. AIDS quickly developed into a worldwide epidemic, affecting virtually every nation. By 2002 as estimated 38.6 million adult and 3.2 million children worldwide was living with HIV infection or AIDS. The world health organization (WHO), a specialized agency of the United Nation (UN), estimates that from 1981 to the end of 2002 about 20 million people died as a result of AIDS. About 4.5million of those who died were children under the age of 15. In India this

number is estimated to be 5.1 million with the state of Tamilnadu alone accounting for 2.3 million with HIV/AIDS affected people. HIV has two major categories.

They are,

HIV-1 and HIV-2.

HIV-1, which currently has about 10 subtypes, is most common worldwide.

HIV-2 is less virulent and though currently confined to West Africa its spreading.

Symptoms Of Aids

In the early stages, a mild flu and swollen glands are typical. But the symptoms are often unmistakable when full- blown AIDS develops. Loss of appetite, weight loss, constant fever, prolonged fatigue, diarrhea, changing bowel patterns, swollen glands, chills coupled with excessive sweating, especially at nights, lesions in the mouth, sore throat, headaches, memory lapses, swelling in the joints, pain in various parts of the body, vision problems and a regular feeling of lethargy and ill health make up the litany of symptoms. With immune systems out of kilter, HIV-positive persons are susceptible to several types of cancer, particularly Kaposi's sarcoma (KS), an uncommon form that occurs under the skin and in the mucus membranes of the eyes, nose and mouth. Affected persons have lesions that appear as dark-coloured raised blotches. Through the lesions are painless, once KS spreads to the lungs, lymph nodes and digestive tract, the victim experiences difficulty in breathing, gastrointestinal bleeding and painful swelling around the lymph nodes, especially in the legs.

How Hiv Transmits

HIV is transmitted primarily by sex (anal, vaginal or oral sex with and infected partner), by injections (sharing contaminated needles for drug use or accidental piercing with a contaminated needle), or from infected mother to child through pregnancy or breast-feeding.

Infected semen and vaginal fluids, infected blood and blood products lead to the transmission of HIV. Drug abuse with unsterilized needles is another high-risk activity. Unprotected sex with multiple partners is the primary cause of infection. During unprotected sex, the infected fluid could enter the bloodstream through a tiny cut or a sore.

Anal penetration has a higher risk of transmission, which is why a high percentage of homosexuals develop the disease. Bleeding during sex also raises the chances of infection. Therefore unprotected sex during menstrual periods and anal intercourse are best avoided. An infected mother can also transmit the virus to her baby before or during birth or through breast milk. Although traces of HIV have been detected in body fluids (saliva, urine, faces and tears) there is no evidence that HIV spreads through these fluids. Nor is it water borne, air-borne or transmitted through mosquitoes and other insects.

Some HIV-infected patients progress to AIDS quickly while others can remain healthy for 10 years or more. Between initial infection and full-blown disease, a middle phase called symptomatic HIV infection, or AIDS-related complex (ARC) occurs, prompting symptoms such as weight loss, diarrhea, and swollen lymph glands.

Scientists have recently discovered clues to why some patients develop AIDS quickly. In a study published in the journal science, national cancer institute researchers found that inherited in the journal science, national cancer institute researchers found that inherited genes may set the clock for AIDS progression. Certain gene patterns tend to stave off AIDS, while others promote it. The researchers say the study may help lead to an AIDS preventive vaccine or improved therapies against the virus.

HIV risk factors among injection drugs users (IDUs) differ markedly by gender, according to a 10-year study funded by the National Institute on Drug Abuse (NIDA). A recent study by researchers at the Johns University reported that while drug-related risk behaviors and homosexual activity are the most important predictors of HIV seroconversion among males, factors consistent with high-risk heterosexual activities are the main predictors among females.

Early studies of injection drug users suggested that most HIV infections were due primarily to sharing needles, said NIDA Director Alan I. Leshner, Ph.D. This study adds to the body of evidence that supports the need for gender-specific interventions in the treatment of that group of drug users.

Between 1988 and 1998, a team of researchers, led by DR. Steffanie Strathdee at the Johns Hopkins University Bloomberg School of Public Health, examined both drug related and sexual risk factors for HIV transmission in the study of more than 1,800 injecting drug users in Baltimore, Maryland. Study participants were aged 18 or older, did not have an AIDS defining illness at enrollment, and reported a history of illicit, injection drug use within the previous 10 years. Through semiannual interviews, researchers collected data on drug use history, sociodemographics, and drug use sexual behavior within the last 6 months. Blood samples were also obtained at each study visit. Researchers used commercial HIV and antibody ELISA to identify those participants who had become HIV positive since their last visit.

Dr. Strathdee and her colleagues found that the greatest predictor for HIV seroconversion among both male and female IDUs was high-risk sexual behavior. Study findings revealed that male injection drug users who reported recent homosexual activity were four times more likely to become infected with HIV.

Among females, indicators of high-risk heterosexual activity outweighed needle-sharing behaviors as independent predictors of HIV seroconversion. HIV incidence was more than two times higher among women who reported recently having sex with another injection drug user.

Another common predictor of HIV seroconversion observed by researchers among both male and female IDUs was younger age. Investigators found that IDUs who were aged 30 or younger at enrollment were more than twice as likely to seroconvert than those aged 40 or older.

Prevention of Aids

While AIDS is a high-risk disease it can be prevented if proper precautions are taken and greater awareness meted out to those who are ignorant of the virus and its repercussions on the human body. Here we have listed a few measures which can be adopted by everyone in order to stave off the insidious entry of HIV.

- Avoid intoxicants like, alcohol or drugs during sex, you might lose control of your senses and engage in unsafe sex. Stick to safer sex practices at all times and avoid having multiple partners. Practice monogamy. If this is a tall order, serial relationships are a lesser evil than multiple ones.
- Prevention is still the best bet. Promiscuous sexual behavior can leave a person highly susceptible to contracting the virus. Where abstinence is not possible, always use latex condoms. The female condom can also help protect both partners. Use only water-based lubricants. Oil lubricants (such as Vaseline) might even tear latex condoms. Use spermicidal (birth control) foams and jellies in addition to condoms. By them, spermicidal may not be effective in preventing HIV.
- High-risk sexual behavior should be avoided at all costs.
- The presence of sexually transmitted diseases (STDs) increases the risk of contracting HIV from an infected partner. STDs could cause breaks in the skin of the vagina, penis or anus permitting the virus to enter your bloodstream. If you ever contract an STD of any kind, ensure you get prompt treatment.
- The CDC recommends that an HIV-positive woman should not breast-feed her baby. The infant should be given AZT for the first several weeks to substantially reduce the risk of infection.

Myths & Facts

Say AIDS and dime-a-dozen misconceptions abound. The chart topper is that AIDS is supposedly a disease of gay men and intravenous drug users. The facts are otherwise. No doubt in the early years many HIVpositive cases were reported amongst the western gay community. In recent years, however, prevalence rates among gays have leveled off. Instead, heterosexual transmission has been forging ahead of all other modes of transmission.

The AIDS virus is NOT contracted through touching, hugging, kissing, massage, sharing toilet seats, drinking or eating from utensils used by an infected person or any other mode of casual contact. Nor does working, socializing and living with infected people cause the disease.

Repeated sexual contact without proper precautions with an infected person, using an infected syringe, exposure to infected blood or sexual fluids are ways through which the disease can be transmitted. Donating blood also does not run the risk of disease contraction since needles used for such purposes are always sterile. Since the AIDS virus is unable to survive outside the human body beyond a short duration, dried blood is not infectious for this reason, mosquitoes are incapable of transmitting HIV as the virus cannot replicate itself in the intestine of insects.

Although medical personnel are potentially at risk from infection, this is minimal if protective gear such as gloves, masks and goggles are always used when handling potentially infected material.

The large-scale infections and deaths have spurred a spate of worldwide efforts for a cure. In the US however, AIDS cases are said to be dropped and new infections leveling off. Mortality from AIDS is also dropping.

In the developing countries, though, the cases continue to rise alarmingly. Globally, three million died in the year 2000, with 5.3 million newly infected people, 95 per cent of whom might die. Many scientists, doctors and researchers contend that AIDS is not a new disease, having been around much longer than people believe.

ANTI-HIV DRUGS IN HIV MANAGEMENT

There are certain anti-HIV drugs which inhibit the replication of HIV. Zidovudine was the first such drug which was approach for use by the USA in 1987. Currently 16 such drugs have been licensed for use in the USA. Depending on the site of its action in the cells, they are classified into nucleoside analogues, non-nucleoside reverse transcriptase inhibitions are protease inhibitors. However, only a few of these are being marketed in India and have received approval of the Drug Controller of India such as zidovudine, didanosine, nevirapine, and so on.

Nucleoside Analogues	**Non-nucleoside reverse transcriptase Inhibitors**
Zidovudine (AZT)	Nevirapine (NUP)
Zalcitabine (ddc)	Delavivdine (DLU)
Didanosine (ddl)	Elfavirenz (EFU)
Stavudine (d4T)	Saquinavir (SQU)
Laminudine (3 TC)	Ritonavir (RTU
Abacavir (ABC)	Indinavir (IDU)
	Welfinavir (NFU)
	Amprenavir (APU)

	Kaletra

WHY AIDS EDUCATION?

Each year there are more and more new HIV infections, which shows that people either aren't learning the message about the dangers of HIV,s or are unable or unwilling to act on it. Many people are dangerously ignorant about the virus, with surveys around the world showing alarmingly low levels of awareness and understanding about HIV amongst many groups. Education can help to overcome such ignorance, and thereby prevent HIG infections from occurring.

Education needs to be an ongoing process, because each generation of young people need to be informed about how they can protect themselves from HIV as they grow up. Older generations, who have already hopefully received some AIDS education, may need the message reinforced, so that they continue to take precautions against HIV infection, and are able to inform younger people of the dangers.

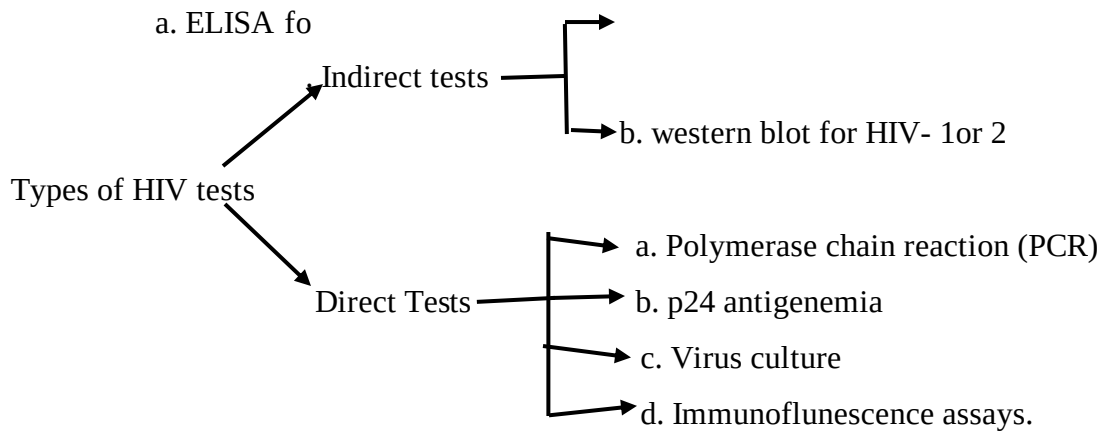
There are three main reasons for AIDS education:

- To prevent new infections from taking place: This can be seen as consisting of two processes: firstly, giving people information about HIV and AIDS such as how they are transmitted and how people can protect themselves from infection. Secondly, people must be taught how to put this information to use and act on it practically how to get and use condoms, how to suggest and practice safer sex, how to prevent infection in a medical environment or when injecting drugs.
- To improve quality of life for HIV positive people: too often, AIDS education is seen as being something which should be targeted only at people who are not infected with HIV in order to present them from becoming infected. When AIDS positive people is considered at all it is frequently seen only in terms of preventing new infections by teaching HIV+ people about the importance of not passing on the virus. An important and commonly neglected aspect of AIDS education with HIV positive people have varying education needs, but among them are the need to be able to access medical services and drug provision and the need to be able to find appropriate emotional and practical support and help.
- To reduce stigma and discrimination: in many countries there is a great deal of fear and stigmatization of people who are HIV positive. This fear is too often accompanied by ignorance, resentment and ultimately, anger. Sometimes the results of prejudice and fear can be extreme, with HIV positive people being burned to death in India, and many families being forced to level their homes across the United States when neighbours discover a family member's positive status. Discrimination against positive people can help the AIDS epidemic to spread, because if people are

fearful of being tested for HIV, them they are more likely to pass the infection to someone else without knowing.

HIV TESTS

There are two types of HIV tests



WHAT FORM SHOULD AIDS EDUCATION TAKE?

AIDS education doesn't always take place in a classroom. It can be presented in many ways and put across by many forms of media, which should be selected with the target group in mind. Some people can be best reached via newspapers and magazines, whilst other people might be more used to street theatre as a form of media. AIDS education needs to embrace culturally appropriate and relevant media.

These might include radio, television, billboard advertising, street theatre, comic strips, etc. Sometimes AIDS education is about giving people information which them will remember on a long term basis, about how to protect themselves the difference between HIV and AIDS, and helping to reduce discrimination. On other occasions, an education strategy might intend to have a more immediate effect and target people when they are most likely to take part in risky behaviour in nightclubs or holiday resorts, for example. There is no set of prescribed form that AIDS education should take, but when considering an education campaign, the following points are relevant.

- What age are the people to be educated?
- Where and when will the target group be most receptive?
- Are there cultural issues to be considered? For example, attitudes to sexuality, or laws against portrayal of explicit mages or languages.
- Are the people to be educated already sexually aware?
- Have the people been exposed to AIDS education before?
- Are the people literate?

- What language do they speak?
- Is the education program targeted at a specific risk- group, e.g. injecting drugusers? What is the best way to reach the group being targeted?
- It is better to tell people how they should behave or inform them of the dangers and let them decide?
- Are people able to do what you're suggesting they do? There's no point in advising people to use condoms if none are available to them, or to use clean needles if needle exchanges are illegal.

HOW SHOULD AIDS EDUCATION BE CARRIED OUT?

There are a number of different methods that can be used to educate the public about the dangers of HIV.

Peer Education

Peer education is, quite simply, a social form of education without classrooms or notebooks, where people are educated outside a school environment but still have the opportunity to ask questions. Sometimes the peer educators will be from the group that is to be educated- a group of workmates might pick someone from amongst them to become the educator. On other occasions the educator may be someone who has a similar social background, age and gender to the target audience, sometimes a person who is HIV+, most peer education focuses on providing information about HIV transmission, answering questions and handing out condoms to people. The sessions take place wherever is convenient sometimes in the workplace, or perhaps in a bar, or where a group of women gather to wash clothes.

Active learning

In order to understand active learning, it is necessary to understand passive learning. Passive learning occurs when a leaner is given a set of facts, often in a classroom environment, and is the type of learning that has been traditionally favoured by academic institutions.

Blanket education

This is a general message aimed at the population as a whole. In many countries, the general population is seen as being at a fairly low risk of HIV infection, and blanked education usually aims to inform the population about which behaviours are risky and to give them support in changing these behaviours. This gives the opportunity for people who are already infected with the virus to avoid transmitting it to others, and for people who have not been infected to protect themselves.

Targeted education

This type of strategy is usually used to speak to social groups who are perceived as being at a high risk of HIV infection- injecting drug users: This type of education usually tends to focus on risky activities particular to the specific target group in this case, the risky behavior is injecting drugs. Blanket education

is inappropriate when wishing to communicate with specific risk groups, as it can incite discrimination in the general population towards the group, ad can tend to promote somebody else's problem thinking.

Celebration

Celebrating world AIDS day, organizing camps, human-chair, rally etc.

TEACHERS ROLE ON AIDS EDUCATION

- Responsible sexual behavior being an important component of AIDS education a teacher has to function as a resource person for accurate information in matters relating to sex, which are sensitive in nature.
- The teacher may try to answer to the questions raised by the students.
- The teacher should ensure that his/her students understand the following crucial messages.
- Since there is no cure for HIV/AIDS prevention is the only defense at the moment.
- HIV can be transmitted through unprotected sexual intercourse, unsterilized needles and syringes, and contaminated blood.
- HIV transmission can be prevented through abstinence and mutually monogamous sexual relations in which neither partner in HIV infected. These constitutes responsible sexual behavior
- Use of condoms minimizes the risk of HIV transmission as it reduces exposure to blood, semen or vaginal fluids
- Drug injectors must not share with anyone else syringes or other drug- related instruments that pierce the skin
- In case of blood transfusion it should be assured that the blood is tested for HIV.

SUMMARY

The chronic problem facing by the world is AIDS, HIV-1 and HIV-2 is two major categories of HIV. Losses of appetite, constant fever, headaches, pain in various parts of the body are the symptoms of AIDS. HIV is transmitted primarily by sex, by injection or from in faceted mother to child through pregnancy or breast feeding. Zidovudines, Nevirapine, Zalcitabine are the major AIDS-HIV drugs. To prevent new infections from taking place, to improve the quality of life for HIV positive people and to reduce stigma and discrimination are the major aims of AIDS education. Peer education, active learning, blanket education and targeted education are the methods that can be used to educate the public about dangers of HIV.

LIFE STYLE DISOREDRS

DIABETES

Diabetes is a long-term condition that causes high blood sugar levels.

Type 1 Diabetes - the body does not produce insulin. Approximately 10% of all diabetes cases are type 1.
Type 2 Diabetes - the body does not produce enough insulin for proper function. Approximately 90% of all cases of diabetes worldwide are of this type.

Gestational Diabetes - this type affects females during pregnancy.

Symptoms

It includes frequent urination, intense thirst and hunger, weight gain, unusual weight loss, fatigue, cuts and bruises that do not heal male sexual dysfunction, numbness and tingling in hands and feet.

Treatment

- If you have Type 1 and follow a healthy eating plan, do adequate exercise, and take insulin.
- Type 2 patients need to eat healthily, be physically active, and test their blood glucose. They may also need to take oral medication, and/or insulin to control blood glucose levels.

HYPERTENSION

Hypertension is another name for high blood pressure. It can lead to severe complications and increases the risk of heart disease, stroke, and death.

- Blood pressure is the force exerted by the blood against the walls of the blood vessels. The pressure depends on the work being done by the heart and the resistance of the blood vessels. The World Health Organization (WHO) suggests that the growth of the processed food industry has impacted the amount of salt in diets worldwide, and that this plays a role in hypertension. Normal blood pressure is 120 over 80 mm of mercury (mmHg), but hypertension is higher than 130 over 80 mmHg.

Treatment

Regular health checks are the best way to monitor your blood pressure.

While blood pressure is best regulated through the diet before it reaches the stage of hypertension, there is a range of treatment options.

Lifestyle adjustments are the standard first-line treatment for hypertension.

Regular physical exercise

Doctors recommend that patients with hypertension engage in 30 minutes of moderate-intensity, dynamic, aerobic exercise. This can include walking, jogging, cycling, or swimming on 5 to 7 days of the week.

HEART ATTACK

The heart is a muscle like any other in the body. Arteries supply it with oxygen-rich blood so that it can contract and push blood to the rest of the body. When there isn't enough oxygen flow to a muscle, its function begins to suffer. Block the oxygen supply completely, and the muscle starts to die.

Causes

Most heart attacks happen when the inside of one or more of your coronary arteries become narrowed due to a gradual build-up of fatty deposits called atheroma.

If a piece of this fatty material breaks off, a blood clot forms to try and repair the damage to the artery wall. This blood clot can block your coronary artery, causing part of your heart muscle to be starved of blood and oxygen. This is a heart attack.

Symptoms

- Pain or discomfort in your chest that suddenly occurs and doesn't go away.
- The pain may spread to your left or right arm or may spread to your neck, jaw, back or stomach. For some people the pain or tightness is severe, while other people just feel uncomfortable.
- You may also feel sick, sweaty, light-headed or short of breath.

Treatment

Bypass surgery involves sewing veins or arteries in place beyond a blocked or narrowed coronary artery, allowing blood flow to the heart to bypass the narrowed section.

OBESITY

Obesity occurs when your body consumes more calories than it burns.

In recent years, the number of overweight people has increased significantly, so much so that the World Health Organization (WHO) has called obesity an epidemic.

Symptoms

People who are obese are at a much higher risk for serious medical conditions such as high blood pressure, heart attack, stroke, diabetes, gallbladder disease, and different cancers than people who have a healthy weight.

A measurement called the body mass index (BMI) does not directly measure body fat, but it is a useful tool to assess the health risk associated with being overweight or obese. A BMI of 18.5 to 24.9 is considered within the healthy range. The BMI is calculated using kilograms (kg) and metres (m)

Causes

It is not caused by overeating by overeating and under-exercising, resulting from a lack of will power and selfcontrol. Obesity is a complex medical problem that involves genetic, environmental, behavioural, and social factors. All these factors play a role in determining a person's weight.

For a person who is genetically prone to weight gain (e.g., has a lower metabolism) and who leads an inactive and unhealthy lifestyle, the risk of becoming obese is high

Treatment

By incorporating more natural foods into your diet, drinking more water, cutting out junk food and getting into the habit of exercising several times every week, you can drastically lower your weight and decrease your chances of becoming obese

ULCER

Stomach ulcers, which are also known as gastric ulcers, are painful sores in the stomach lining. Stomach ulcers are a type of peptic ulcer disease. Peptic ulcers are any ulcers that affect both the stomach and small intestines.

Stomach ulcers occur when the thick layer of mucus that protects your stomach from digestive juices is reduced. This allows the digestive acids to eat away at the tissues that line the stomach, causing an ulcer. Other common signs and symptoms of ulcers include:

- dull pain in the stomach
- weight loss
- not wanting to eat because of pain
- nausea or vomiting
- bloating
- feeling easily full
- burping or acid reflux
- heartburn (burning sensation in the chest)
- pain that may improve when you eat, drink, or take antacids
- anemia (symptoms can include tiredness, shortness of breath, or paler skin)
- dark, tarry stools
- vomit that's bloody or looks like coffee grounds

STRESS REDUCTION

Avoiding stress, or developing strategies for managing unavoidable stress, can help with blood pressure control.

Using alcohol, drugs, smoking, and unhealthy eating to cope with stress will add to hypertensive problems. These should be avoided.

Smoking can raise blood pressure. Giving up smoking reduces the risk of hypertension, heart conditions, and other health issues.

UNIT- IV: PHYSICAL EDUCATION AND PHYSICAL EXERCISE

Introduction

Physical education has existed since the earliest stages of human society, in forms as simple as the transmission of basic survival skills, such as hunting. Later, the ancient Chinese, Indian, and Egyptian civilizations had traditions of physical education and activity, most commonly acted out in sporting competitions, military tactics and training, and martial arts.

The first requisite for national and for individual development is physical education. There are many-problems that confront physical education and the most important one is the lack of appreciation of the fact on the part of the public in general and the educational authorities in particular. As a matter of fact our people have been rather slow to recognize that exercise and perspirations are the bye-product of physical education.

Not understanding the real concept of physical education people still talk about it in terms of drill, physical training, physical culture, sports, gymnastics etc. Even the educationists and the educational administrators, who are in the helm of affairs, are totally unmindful of the educative potentialities of physical education.

Not taking into consideration the substantial contribution that physical education makes towards the education of the child physical, mental, moral, social and emotional; they only take in to account superficially, the one aspect of physical education that is the development of skill in games and sports, merely on winning teams etc. The concept of physical education is correctly, thoroughly and most wholesomely interpreted to the people in general and educational administrators in particular.

Modern Concept of Physical Education

Physical education in its modern concept is broader and more meaningful. There is no doubt that it is conducive not only to build up organic health but also in being helpful in developing mental and emotional health and social qualities that are considered to be desirable by the society. It provides that

much of energy which is so very necessary for every person to withstand the wear and tear of the struggle for existence.

Physical education is not confined to some forms of drill and regular exercises, but emphasizes on the physical fitness value. Physical development and mental development are inter-related and go together. Locke emphasized, "A sound mind in a sound body" is a short but full description of a happy state of an individual.

Kilpatrick has detained it as "A way of education through motor activity and related experiences and its subject matter is primarily ways of behaving". The capable and intelligent leadership during play periods can guide and help children to develop desirable way of behaving towards their team mates, opponents, officials, spectators and in regard to the solution of problems that arise during games and intelligent decision based on reason rather than on prejudices and emotions.

According to Modular Commission, "Physical education is not merely a drill or a series of regulated exercises. It includes all forms of physical activities and games which promote the development of body and mind". Kothari Commission opined, "Physical education contributes not only to the physical fitness but also to physical efficiency, mental alertness and the development of certain qualities like perseverance, team spirit, leadership, discipline, tolerance, adherence to rules, moderation in victory and balance in defeat". Physical education is considered as that part of education which makes its presence felt predominantly through physical activity.

However, physical education is complete educative process and not mere exercise and perspiration, properly planned and conducted; it has a legitimate claim for inclusion in the general scheme of education.

Meaning and Definitions of Physical Education

Physical Education is "education through the physical". It aims to develop students' physical competence and knowledge of movement and safety, and their ability to use these to perform in a wide range of activities associated with the development of an active and healthy lifestyle. It also develops students' confidence and generic skills, especially those of collaboration, communication, creativity, critical thinking and aesthetic appreciation. These, together with the nurturing of positive values and attitudes in Physical Education, provide a good foundation for students' lifelong and life wide learning.

Physical education is a course taught in school that focuses on developing physical fitness and the ability to perform and enjoy day-to-day physical activities with ease. Kids also develop skills necessary to participate in a wide range of activities, such as soccer, basketball, or swimming. Regular physical education classes prepare kids to be physically and mentally active, fit, and healthy into adulthood. An

effective physical education program should include engaging lessons, trained P.E. teachers, adequate instructional periods, and student evaluation.

A balanced physical education program provides each student with an opportunity to develop into a physically-educated person; one who learns skills necessary to perform a variety of physical activities is physically fit, participates regularly in physical activity, knows the benefits from involvement in physical activity and its contributions to a healthy lifestyle. For all students to become physically educated, instruction is designed for all students with special consideration for students who need help the most, less skilled students and students with disabilities. Students who are skilled and blessed with innate ability have many opportunities to learn. All students must feel successful if they are expected to enjoy and value physical activity. Activity is the basis of the program and offers opportunities for repetition and refinement of physical skills. Activities are success oriented so students are motivated to continue.

According to the National Association of Sports and Physical Education, physical education consists of four components: opportunity to learn, meaningful content, appropriate instruction and student and program assessment. Physical education helps students develop a positive attitude towards physical activity and adopt healthy and active lifestyles.

A quality physical education program provides developmentally appropriate curriculum and meets the needs of each student. Lessons should be designed to provide maximum opportunities for inclusion of all students. Homework assignments should support learning and practice of skill development.

Physical education programs should place emphasis on student learning and skill development that can potentially result in a lifetime of physical activity for students. The curriculum is based on national standards that illustrate what students should know and be able to do. Programs include motor skill development to aid in the physical, mental and socio emotional development of students. Physical activities should be fun and not be withheld as punishment, because students may grow to hate the activity.

A quality program teaches students to cooperate, play fair and participate responsibly in physical activity. Students learn self-management skills, such as setting goals and self-monitoring. Assessment is vital and should be an ongoing component of the program. Furthermore, self-assessment reinforces learning and skill development.

A quality physical education program has the potential to make four unique contributions to the lives of students: (1) daily physical activity, (2) a personalized level of physical fitness, (3) development of competency in a variety of physical and sport skills, and (4) acquiring the requisite knowledge for living an active and healthy lifestyle (Darst, Pangrazi, Sariscsany, & Brusseau, 2012).

To define physical education, we need to say that it is an educational process that aims to improve human development and performance through physical activity.

In a broader context, physical education is defined as a process of learning through physical activities designed to improve physical fitness, develop motor skills, knowledge and behavior of healthy and active living, sportsmanship, and emotional intelligence. Thus, Physical Education is not only aimed at physical development but also includes the development of the individual as a whole.

Barrow defined Physical Education as 'an educational objective' is achieved by means of big muscle activities involving sports, games, gymnastics, dance and exercise'

Physical education is a process through which an individual obtains optimal, physical, mental and social skills - Lumpkin (1986).

Physical education is a meaningful and worthwhile experience obtained through participation in physical activities that are physically wholesome mentally stimulating and satisfying and socially sound. - William (1966).

Physical education is an educational process that has its aim, the improvement of human performance through the medium of physical activities 4 selection to realize this outcome. Physical education includes the acquisition and refinement of motor skills, the development and maintenance of fitness for optimal health and well being the attainment of knowledge the growth of positive attitude towards physical activity. - Bucher (1989)

"Physical Education is the sum of man's physical activities selected as a kind and conducted as to outcomes" – Jesse Feiring Williams

AIMS OF PHYSICAL EDUCATION

The aim of physical education is to enable the student to:

- appreciate and understand the value of physical education and its relationship to a healthy, active lifestyle
- work to their optimal level of physical fitness
- become aware of movement as a creative medium connected to communication, expression and aesthetic appreciation
- develop the motor skills necessary to participate successfully in a variety of physical activities

- experience enjoyment and satisfaction through physical activity develop social skills that demonstrate the importance of teamwork and cooperation in group activities
- demonstrate a high level of interest and personal engagement showing initiative, enthusiasm and commitment
- show knowledge and understanding in a variety of physical activities and evaluate their own and others' performances
- demonstrate the ability to critically reflect upon physical activity in both a local and intercultural context
- demonstrate the ability and enthusiasm to pass on to others in the community the knowledge, skills and techniques that have been learned.

OBJECTIVES OF PHYSICAL EDUCATION

- To create opportunities for big muscle activity in order to facilitate the growth and development of the body.
- To sustain the child's interest in and love of physical activity by teaching activities based on the needs, interests and abilities of all children.
- To develop neuro-muscular skills so that they participate in various activities such as running, jumping, rowing, and catching and so on.
- To inculcate moral values such as fair play, team spirit, sportsmanship and respect for fellow players.
- To understand the need to abide by the rules and regulations of the games and sports.
- To create an awareness of the safety and first aid measures to be taken in sports and games.
- To teach recreational activities which may be useful during the leisure time of the child
- To orient the children to different aspects of health as it relates to physical education
- To enable the children to identify the link between physical education and other subjects.

SCOPE OF PHYSICAL EDUCATION

Physical Education is a very developed area and it has a very wide scope. Today, it is not limited to various kinds of physical exercises. All the factors or activities which help in developing an individual's personality are included in it now. It consists of all the areas or facets of human activities.

Now, knowledge of physical education or participation in physical activities are not concerned important only for the school going students, but also for people of all ages and both the sex. Whatever

may be the physical abilities of individuals, all the persons should participate in different kinds of physical activities. The objective of physical education programme is not only to train or create outstanding players, but another important objective it has is to maintain the health of all the people using or participating in it.

Today, programmes of physical education are prepared in such a way that needs and requirements of all the people get fulfilled. According to the age and requirements of people participating in the activities, one should prepare the programme carefully. Various kinds of programmes can be prepared, some of which are Service Programme, Intramural and Extramural programme and Fitness and Recreational Programme. The programme in which importance is provided to the instructional aspect is termed as service programme. Such programme in which provide opportunities to develop the skills and abilities to all the participants is termed as intramural programme. When in competitions, players of different region or parts take part, it is termed as extramural programmes while the programme which provides fun, thrill, action and skill to the participants is known as fitness and recreational programme.

NEED FOR PHYSICAL EDUCATION

Physical education refers to the process of imparting systematic instructions in physical exercise, sports, games, and hygiene. The term is generally used for the physical education programs at schools and colleges. Education aims at the training of the body, mind, and conduct of a student.

To keep a healthy mind within a healthy body, a student needs regular physical exercise. The brain of students gets tired after schoolwork. His mind refuses to work. Therefore, for diversion and refreshment of mind, he requires some organized forms of physical and mental work.

Physical education forms an important part of modern education. Almost every school can boast of a playground, and one or two teams. In every modern school and colleges, after class work, students join various sports and games. The students generally take to all kinds of physical activities and show a great deal of interest in them.

Various kinds of games, sports, and physical exercises are taught in schools as part of physical education program. Some of them are outdoor, others indoor. The outdoor games include football, hockey, cricket, tennis, badminton, volleyball, and so on. Sports include popular pastimes like swimming, boating, athletic activities like pole jump, long jump, racing, and javelin throwing. Students are also taught physical exercises to improve and maintain good health.

"The higher your energy level, the more efficient your body. The more efficient your body, the better you feel and the more you use your talent you produce outstanding results."

- Anthony Robbins

A quality physical education program will help to

- Improve self-esteem, self-confidence, and interpersonal skills.
- Gain a sense of belonging through teamwork.
- Prepare to embrace cooperation and competition.
- Handle adversity through winning and losing.
- Develop social skills.
- Learn discipline.
- Improve problem solving skills and increase creativity.
- Develop an understanding of the role of physical activity in promoting health.
- Reduce their tendency to risk behaviors such as use of drugs, alcohol, and tobacco, missing or dropping out of school, and getting pregnant.
- Enhance social and cognitive development and academic achievement.

"The human body was designed to walk, run, or stop; it wasn't built for coasting."

- Cullen Hightower

"Movement is the medicine for creating change in a person's physical, emotional, and mental states."

-Carol Welch

IMPORTANCE OF PHYSICAL EDUCATION

Physical education considers the child as a united whole of mental, social, moral, and physical qualities and provides for the optimum development of all these through the physical activities.

1. **Physical growth and development** - Physical activity must be learned; hence there is a need for thinking on the part of the intellectual mechanism, with a resulting acquisition of knowledge. Physical activities are essential for the development of a child's scientific insight, intelligence and superior type of reflective thinking.
2. **Intellectual development**- Physical activities must be learned; hence there is a need for thinking on the part of the intellectual mechanism, with a resulting acquisition of

knowledge. Physical activities are essential for the development of a child's scientific insight, intelligence and superior type of reflective thinking.

3. **Emotional development** – Physical education provides opportunities to control emotions. The give and take of games and sports offer scope for both emotional release and the controlling of the emotions.
4. **Social adjustment -** Physical activities provide opportunity of interaction between participants and others in varied situations enabling them to learn social qualities like sportsmanship, co-operation, honesty, friendship, fellowship, courtesy, self discipline, and respect for authority which promote social adjustment of an individual.
5. **Personal adjustment -** Physical education gives a full and worth- while experience to the individual which help him to realize fullest self-expression and highest satisfaction from the results of his action, and thereby facilitates his personal adjustment in life.
6. **Character development –** Group effort, loyalty to the team and strong ties is much in evidence in play and physical activities. They provide a valuable contribution to the development of good moral character.
7. **Physical fitness –** Physical education through exercise and knowledge about one's body and its requirements contribute immensely to physical fitness. Regular exercise improves our physical efficiently, sense of well-being and appearance.
8. **Mental development -** The learning of skills, game, rules, techniques and strategies, and judgment making equip an individual to interpret new situations effectively. Physical education programme also make an individual aware regarding the importance of sanitation, health and hygienic, prevention of disease, balance diet and health habits hereby improving his mental development.

BENEFITS OF PHYSICAL EDUCATION

1. Improved Fitness: Skipping, jumping, running, lifting and other exercises make a person more fit.
2. **Unity, Team-spirit and Togetherness:** Exercising with other students helps forge togetherness and boosts team spirit.
3. **Makes a Person More Active:** It makes a person more active and helps combating ailments associated with laziness or "potato couching."
4. **Lots of Fun:** Physical exercises are fun and enjoyable especially when they are varied.
5. **Increased Socialization:** PE teaches students to be more social and also outgoing. This shapes their future life and interaction.

6. **Better Health:** Regular exercises improve the respiratory, cardiovascular, immune and other bodily systems. This keeps diseases at bay.
7. **Boosts Self Esteem:** Regular interaction with other pupils or students improves self-esteem and awareness.
8. **Talent Discovery:** Instructors or teachers can easily spot talent during the exercises and will guide a pupil so as to improve the talent.
9. **Boosts General Wellness**: In addition to making a person more active and fit, PE also improves general wellness.
10. **Reduces Injuries:** According to research, people who regularly exercise are less prone to injuries and will recover more quickly from fatigue or sickness.
11. **Encourages Team Spirit:** Working together and following instructions is the winning recipe for a strong and solid team.
12. **Goal Setting:** Students will be encouraged to set and aim at meeting their target. Over time, they become good goal setters and achievers.
13. **Reduces Boredom:** Physical education takes away the boredom of staying in the classroom.
14. **Step to Future Career:** Many careers such as gym instructors, physiotherapist, sportsmen and others are founded on physical education.
15. **Minimize Monotony:** Unlike learning, PE is quite varied and can be interchanged at will. This ensures that all participants have something to enjoy.
16. **Warm-up Exercises:** Most warming-up exercises are founded on physical Education. Think of skipping, squatting, and running on the spot.
17. **Relaxes the Mind:** PE helps relax the mind especially after being in a classroom for long or handling a challenging academic task.
18. **Boost Strength:** PE helps to improve the strength, stamina and endurance. Good exercises include skipping rope, carrying each other, playing soccer (football) and more.
19. **Break from Academics:** This activity allows pupils /students to take a break from demanding academics.
20. **Improves Cognitive Performance:** Participants become more alert and their brain functioning and memory improves over time.
21. **Self Discipline:** Listening to instructions and following them instills self-discipline in the students.
22. **Stress Reduction:** PE is known to lower the stress levels and helps a person temporarily forget a problem.

23. **Support other Fields:** Subjects such as social studies, biology and sports are related to physical education.
24. **Improves Judgment:** Students learn how to develop their morals as they follow instructions and work with others. They also learn to accept responsibilities.
25. **Enhance Physical Competence:** Physical education helps nurture positive attitudes and talents which shape a person's future.

Conclusion: Though it may seem like a mundane activity, Physical Education is vital in the proper growth of a child. And unless you understand it and its positive effects, you are more-likely to ignore or apply the wrong strategies. In addition to making your child more active and physically fit, physical education also keeps diseases at bay.

MEANING AND DEFINITION OF PHYSICAL FITNESS

Fitness is a broad term denoting dynamic qualities that allow satisfying the needs regarding mental, emotional stability special consciousness and adoptability spiritual and oral fear and organic health are consistent with heredity. Physical fitness means that the organic systems of the body are healthy and function efficiently vigorous tasks and leisure activities beyond Organic development, muscular strength and stamina. Physical fitness implies efficient performance in exercises -Bucher and Prentice (1985).

Most authors define 'physical fitness's as the capacity to carry out every day activities without excessive fatigue and with enough energy in reserve for emergencies. Emphatically this definition is inadequate for a modern way of life. By such a definition almost anyone can classify himself as physicallyfit.

- Gatchell (1977).

According to Clarke (1971) Physical fitness is the ability to carry out daily task with vigor and alertness without undue fatigue and ample energy to enjoy leisure time pursuits and to meet unforeseen emergencies.

According to Bucher (1958) Physical fitness is "the ability of an individual to live a full and balanced life. It involves physical, mental, emotional, social and spiritual factors and the capacity for their wholesome expression". Physical fitness refers to practical performance of exercise that calls for the number of experiences, they are the feeling of happiness in the process of correct performance of movement, feeling of "confidence, self satisfaction, surprise and unhappy in the process of confusion and disappointment etc.

It is a positive quality, extending on a scale from death to "abundant life". All living individuals have some degree of physical fitness which varies considerably in different people and in the same person at different times. It is not as broad in its meaning as 'total fitness'. It include, adequate degree of health,

posture, physique, proper functioning of vital organs, nutrition, and good health habits along with an adequate amount of endurance, strength, stamina and flexibility Clark and David (1978) .

COMPONENTS OF PHYSICAL FITNESS

"Physical fitness is not only one of the most important keys to a healthy body, it is the basis of dynamic and creative intellectual activity." - John F. Kennedy

Physical fitness can be classified into following categories:

A. Health related fitness components
B. Skill related fitness components

A. HEALTH RELATED FITNESS COMPONENTS

Health Related Physical fitness is best defined as activity aimed to improve your health. The goal of health related fitness is prevention of or rehabilitation from disease as well as the development of a high level of functional capacity for daily tasks.

Health related physical fitness is further divided into 5 components. These are as follows:

1. Body composition
2. Cardiovascular fitness
3. Flexibility
4. Muscular endurance
5. Muscle strength

B. SKILL RELATED FITNESS COMPONENTS

Skill related physical fitness is further divided into 6 components. These are as follows:

1. Agility
2. Balance
3. Coordination
4. Power
5. Reaction Time
6. Speed

Fitness isn't defined by appearance. There are five health related components of physical fitness you need to consider:

1. Muscular Strength

This is the "power" that helps you to lift and carry heavy objects. Without muscular strength, your body would be weak and unable to keep up with the demands placed upon it.

The way to increase strength is to train with heavy weights, working in the 4 - 6 or 12 - 15 rep ranges. The heavier the weight, the fewer reps you should perform.

2. Muscular Endurance

Endurance is the ability of your muscles to perform contractions for extended periods of time. Rather than just lifting or carrying something for a few seconds, the muscles are used for minutes.

The way to increase strength is to train with light weights, working in the 20 - 25 rep range. Working with lighter weight will train the muscle fibers needed for muscular endurance, and the higher rep range leads to a longer period of exercise.

3. Cardiovascular Endurance

Cardiovascular endurance is your body's ability to keep up with exercise like running, jogging, swimming, cycling, and anything that forces your cardiovascular system (lungs, heart, blood vessels) to work for extended periods of time. Together, the heart and lungs fuel your body with the oxygen needed by your muscles, ensuring that they have the oxygen needed for the work they are doing.

The Cooper Run (running as far as possible in 12 minutes) is a test commonly used to assess cardio vascular endurance, but many trainers use the Step Test (stepping onto a platform for 5 minutes). Both are accurate measures of a subject's cardiovascular endurance.

4. Flexibility

Flexibility is one of the most important, yet often overlooked, components of physical fitness. Without flexibility, the muscles and joints would grow stiff and movement would be limited. Flexibility training ensures that your body can move through its entire range of motion without pain or stiffness.

To test your flexibility, lean forward and try to touch your toes. Those with good flexibility will usually be able to touch their toes, while those with limited flexibility will not. The sit and reach test (sitting on the floor and reaching toward your toes) is another good way to assess your flexibility. The more flexible you are, the closer you will come to touching your toes and beyond.

5. Body Fat Composition

Body fat composition refers to the amount of fat on your body. For example, a 100-pound person with a 25% body fat composition will have a lean body mass of 75 pounds.

To qualify as fit:

- Men must have a body fat composition lower than 17 percent
- Women must have a body fat composition lower than 24 percent

The average man tends to have about 18 to 24 percent body fat, while the average woman has 25 to 31 percent body fat.

Any program that neglects one or more of these types of fitness is not going to benefit the body in the long run. An effective fitness program will attempt to improve all five components of fitness.

Assessing physical fitness

The test below will assist to assess or evaluate the present physical fitness status for the purpose of understanding the strengths and weaknesses of an individual. The test selected measure the health related components of physical fitness and can be administered with ease and consistency. These recommended tests will provide with a rough estimate of physical fitness of a person.

1. Test for assessing Muscular Strength and Endurance

- Sit ups
- Modified Push ups
- Push ups

2.Test for assessing Flexibility

- Trunk flexion
- Trunk extension

3.Test for assessing Cardiovascular endurance

- Step test

4.Test for assessing Body composition

- Skinfold Caliper to estimate body fat

Thus fitness testing

- Establish one's fitness status
- Use as basis for setting goals
- Use results to plan proper workouts
- Use to evaluate conditioning changes
- Provide motivation for starting and adhering to an exercise programme

BENEFITS OF PHYSICAL FITNESS

The benefits of physical fitness are numerous and include better health, greater strength, more flexibility, increased energy, improved appearance, and a more positive attitude and mood. Regular exercise can lead to both immediate and long-term benefits. Regular physical activity has been shown **to reduce the morbidity and mortality from many chronic diseases.**

The benefits of fitness far outweigh the inconveniences of regular exercise. To reap the maximum benefits of physical fitness, remember that your program should include all the main five components of

physical fitness. These are the health related fitness components like cardiovascular endurance, flexibility, muscular endurance and muscle strength. There are in fact other components of physical fitness but they are skill related and less important.

Physical fitness is considered a measure of the body's ability to function efficiently and effectively in work and leisure activities, to be healthy, to resist hypo kinetic diseases, and to meet emergency situations.

Physical fitness is **generally achieved through**

- physical activity and exercise,
- correct nutrition,
- enough rest (good quality sleep),

Stress management and relaxation.

The benefit of the physical fitness is endless. Explore some of the benefits of fitness leading to healthy lifestyle and learn how you will get benefited from them:

1: Reduces risk of disease

People who participate in regular exercise have a decreased risk of developing:

- heart disease
- diabetes
- metabolic syndrome
- colon cancer
- lung cancer
- breast cancer

2. Development of physical fitness components

Development of physical fitness components such as muscle strength and endurance, cardiovascular endurance, flexibility, agility, speed, bone density etc and improvement of muscle tone.

3. Provide better health

Regular physical exercise increases both the size and strength of the heart. It can pump more blood with less effort and becomes more efficient. This will lower pulse and lower the blood pressure which can increase lifespan. The circulatory system is also improved because of increased blood volume providing more oxygen to the muscles. These effects will translate into a reduced risk for heart disease, heart attack, and stroke.

Significant cardiovascular health benefits can be attained with long-term participation in cardiovascular exercise.

4. Lower your Cholesterol levels

The benefits of physical fitness extend to their ability to help you control your cholesterol. They raise your levels of 'good' cholesterol and drop your levels of 'bad' cholesterol.

5. Builds stronger Bones, Joints and Ligaments

Physical activity results in the strengthening of our bones and muscles. It can substantially reduce the risk or arthritis and other bone diseases. Weight bearing exercise is shown to increase bone density and also prevent bone loss as we get older. This can reduce the onset and severity of osteoporosis. Resistance training does a great job. The strain that it puts on your body helps build bigger, stronger bones.

Different kinds of strength training put strain on your joints. This actually helps your body strengthen connective tissue in those joints. These tissues become stronger, more flexible and less prone to injury. Increased blood supply means better nutrition for the tissues and better removal of waste products which helps improve the health and durability.

6. Maintenance of Optimal Body Weight

Physical activity increases the muscle mass, reduces fat and thus controls weight. It is proven that physical fitness can control your body weight and prevent obesity and other weight-related problems.

By combining the right physical workouts with a proper and balanced diet, you can expect weight loss, reduced body fat and a more firm and fit body. Aerobic exercise burns calories during the duration of the exercise and strength training burns calories in the 24 hour period following the training.

7. Improves your sleeping habits

One of the benefits of physical fitness is that it provides you sound sleep and improves your sleeping habits. Studies show that people who exercise regularly and are physically fit - fall asleep more easily and sleep longer than those who do not exercise and are physically unfit. Because of cooling off after exercise, your body temperature drops leading to deeper sleep.

8. Boost in energy level

Exercise improves the blood flow in the body and promotes better sleep, both of which boost energy. A regular exercise program, especially in the mornings, will give you energy and drive for the rest of the day. This effect is related to the increased metabolism associated with a fitter body.

9. Improved Appearance

Physical activity build muscle mass and burns excess fat. It tones body muscles helping you to look fit and healthy. Healthy active people almost always have great skin tone and look fresh, less fatigued.

10. Relaxation and Stress relief

There are so many stress factors in our day to day life. Because of lifestyle changes, change in the environment, people live under extreme stress in this competitive world. Regular physical activity, fitness workouts releases the hormones which have “feel good factor.”It helps in reducing your stress levels and gives you more strength to fight life’s challenges.

11. Fights Depression

Effects of physical activity and exercise on mood are immediate. Blood flow to the brain is increased, endorphins are released and your mood lifts. These endorphins make you feel better and fight stress and depression.

12. Causes Delayed Aging

Among the several benefits of physical fitness, delayed aging leading to positive thinking and improved self perception is the most sought after.

Regular physical activity reverses the natural decline in the metabolism of the body. Daily exercise is found to keep a person productive and energetic for a longer period of the day. Regular physical activity postpones the process of aging and increases the longevity of life.

13. Makes you feel happier

Physical activity has important role in keeping your body fit. Exercise causes your body to release endorphins which has a "feel good factor". Because of these endorphins you feel happier.

14. Postpones fatigue

The benefits of physical fitness include the postponement of fatigue and reduced recovery time after vigorous activity.

15. Boost your Confidence

Physical fitness provides correct posture, figure, body image, and good appearance along with increased energy levels. It gives you a sense of accomplishment, which is a boost to confidence.

16. Utilization of Time

Through Participation in physical fitness program, leisure (free) time is properly utilized and make you fit and healthy.

17. Improve your overall health

Physical fitness provides you the optimum physical health, general well being and mental stability. In other words it improves your overall health and you can live your life to the fullest.

18. Healthier, longer Life

All together, the benefits of physical fitness give you healthy and more efficient body. Thus it increases your chance of leading a healthier, longer and more fulfilling life.

These are some of the more prominent benefits of physical fitness. Everyone can and should participate in a fitness program to improve their quality of life. Living an active and healthy life will make your overall lifestyle much better.

MEANING PHYSICAL EXERCISE

Physical exercises are a series of movements or actions which you do in order to get fit, remain healthy, or practice for a particular physical activity.

Physical exercise is the planned and repetitive bodily activity that is done to gain good health or to maintain physical and mental fitness.

Physical exercise refers to any physical activity or bodily movement that is undertaken in a planned manner with the aim:

- to improve or recondition the entire body or part of the body,
- to improve or maintain the health and fitness of the body,
- to strengthen the body and to make the muscles stronger,
- to lose weight or to prevent obesity,
- to maintain or improve the functional ability of various organs,
- to maintain youthfulness,
- to delay the process of ageing,
- to prevent cardiac diseases by improving the functioning of the cardiovascular system,
- to improve immunity system and prevent diseases,
- to prevent depression, insomnia, and
- to improve mental fitness.

Types

Physical exercises are generally classified into aerobics, anaerobic, and flexibility.

1. **Aerobic** means requiring or using oxygen. **Aerobic exercises** are done to make the body consume more oxygen. This process helps improve the condition of the heart and the circulatory system. Example: swimming, cycling, etc.
2. **Anaerobic** means not requiring or using oxygen. **Anaerobic exercises** are highly intensive exercises that are done for short duration. Example: weight lifting. As against the aerobic exercises that depends upon the breathing air, the demand for oxygen far exceeds the supply in case of anaerobic exercises.
3. **Flexibility** means the ability to bend easily without much difficulty. **Flexibility exercises** are done to improve muscular mobility and joint flexibility. Example: stretching,

NEED AND IMPORTANCE OF PHYSICAL EXERCISE

There is a need for physical exercise in every spheres of life. Physical Exercise is very important for proper health and fitness. Physical exercises are necessary for every citizen of the country.

The youths are choosing to eat junk foods. It spoils the health of the youth people. They look old before time. Their poor health is a social problem. People without good health cannot enjoy life. We cannot have a strong nation if the citizens have no good health.

Man is superior to animals because he has a developed mind. He controls the animals with his intellect. But we cannot have mental growth if our body is weak and sickly. The death of body means the death of the mind also. 'A sound mind is in a sound body' is a popular saying. So, physical exercises are very necessary for mental health. A sickly man cannot sit well. He cannot do his work properly.

India earned her freedom after great sacrifices. We have to protect her freedom. We have to make our defenses strong. The citizens of our country must be physically fit and healthy. Only then they can defend the country's freedom. Pandit Nehru once said, 'every child of India shall have to be a soldier of freedom'.

The economy of our country depends upon agriculture. The agricultural production of our country is low. If our workers are physically strong and healthy, then it will help our country to increase the agricultural output. In fact, physical exercises are useful for them. These exercises will keep them fit and healthy. Then our production on farms and in factories will go up.

Student life is considered incomplete without physical activities and exercises. Physical activities are as important as studies. It is for this reason that schools and colleges dedicate special classes for physical exercises. This help the students to stay fit, both physically and mentally.

Physical exercise is very important for office goers as well. There is very few opportunities for physical activity in offices. The modern age is the age of information technology and internet. People work for several hours sitting in front of the computer. This causes stress in the eyes and body of such people. The health of the modern-day office goes is deteriorating every day. Such people should engage in some physical activity and exercise to regenerate and rejuvenate their mind and body. They can also choose to go for morning walk each day.

Physical exercises make us healthy. They make us good citizens. Life without good health is no life at all. If we spend an hour in taking physical exercises, we can work hard for the rest of the day. Thus, physical exercises are of great use to us. They should be made compulsory for students, teachers and office-goers.

EFFECTS OF EXERCISE ON VARIOUS SYSTEMS

Exercise affects your body in countless ways as well—both directly and indirectly. There are a number of biological effects that occur, from head to toe, when you exercise. One of the key health benefits of exercise is that it helps normalize your glucose, insulin, and leptin levels by optimizing insulin/leptin receptor sensitivity. This is perhaps the most important factor for optimizing your overall health and preventing chronic disease. Exercise is a critical component of good health, especially as you age. Exercise will help you:

- Sleep better, Lose weight, gain weight, or maintain weight, depending on your needs
- Improve your resistance to fight infections
- Lower your risk of cancer, heart disease and diabetes
- Help your brain work better, making you smarter.

The key to obtaining the benefits of exercise is to find a program and stick to it.

1. EFFECTS OF EXERCISE ON MUSCULAR SYSTEM

- **Muscle size** – is mostly determined by persons genetics, but can be affected with life choices like: anabolic steroids, exercise, and healthy food. Exercising specific muscles regularly can increase their size by up to 60%. This increase in muscle size is mainly due to increased diameter of individual muscle fibers.
- **Muscle coordination** – It trains muscles to work more efficient and effectively by working together. E.g.: when the prime mover contracts more rapidly the antagonist (muscle) must also relax as quickly to prevent blocking the movement.
- **Blood supply** – As a result of frequent exercise over a sustained period of time both the quantity of blood vessels and the extent of the capillary beds increases.

Effects of exercise on muscular system would benefit by increasing size and number of mitochondria, improved perception of muscle tone and also overall improved:

- Coordination
- Power
- Balance
- Speed
- Agility
- Body composition
- Reaction time
- Muscular endurance
- Flexibility

2. EFFECTS OF EXERCISES ON CIRCULATORY SYSTEM

Your circulatory system consists of your heart, blood vessels and blood, and is responsible for transporting life-giving oxygen throughout your body. When you exercise, your body's need for oxygen

increases; the harder you work out, the more oxygen your body demands. To ensure that sufficient oxygen is available for your muscles during activity, your body makes short- and long-term changes.

Exercise and Your Heart

Your heart -- referred to as the myocardium, meaning heart muscle -- is a four-chambered pump about the size of your fist, located slightly left of center in your chest. Its job is to pump blood. When you exercise, your heart rate can increase from a resting average of 72 to 200 beats per minute, depending on your fitness level and age. As you get fitter, your heart becomes stronger and your resting heart rate decreases.

Exercise and Your Blood Vessels

Blood vessels carry blood throughout your body. Arteries take blood away from your heart; veins return blood to your heart, and capillaries drop off and collect blood at your muscles and lungs. As you exercise, the hormone adrenalin causes your blood vessels to expand to allow passage of a greater-thannormal volume of blood. This is called vasodilatation, which is a short-term response to exercise and is one of the reasons your surface blood vessels may become more prominent during exercise. A long-term response to exercise is the building of new capillaries so more oxygen can be delivered to, and more carbon dioxide can be removed from, your working muscles.

Blood Pooling

When you exercise, blood is diverted from non-essential organs, such as those involved with your digestive and reproductive systems, and into your working muscles. This is termed blood pooling and ensures that your working muscles get as much oxygen as they need. Once you have finished your strenuous exercise, it is important to encourage the pooled blood to move out of the muscles and back into general circulation. This is commonly achieved by performing a cool-down consisting of light cardiovascular exercise and stretching. Blood left pooling in muscles is linked to the onset of postexercise muscle soreness.

Exercise and Your Blood

Your blood contains three different types of cells: white blood cells that fight infection, platelets that aid in clotting and red blood cells that transport oxygen. These cells are suspended in a liquid called plasma which is predominately water. While you exercise, your red blood cells become saturated with oxygen in an effort to ensure that enough oxygen is available for your muscles. As a long-term benefit of exercise, your red blood cell count increases as you get fitter so you are better able to transport greater amounts of oxygen throughout your body.

3. EFFECTS OF EXERCISES ON DIGESTIVE SYSTEM

A healthy digestive system is vital for the overall health of the body. If it is slow or in trouble, the rest of the body will be slow and in trouble too. This is because the digestive system is the area where the

nutrients are absorbed and the majority of toxic wastes are dumped into. It is also the home for the immune system, which is responsible for keeping many serious diseases and common ailments at bay.

One of the ways to maintain a healthy digestive system is with exercise. Exercise can help in various ways, such as increase the metabolism and blood flow, as well as help to relax the body and mind, all of which can help to improve digestion.

Increased Metabolism

One of the benefits of exercise is that it increases the metabolism. As a result, the food can move through the system much quicker, which then eases the load for the digestive system. If the food does not pass through fast enough, it can potentially rot and become toxic inside the tract. This is the last thing that you want as that will cause a buildup, which then reduces the amount of nutrients that get absorbed.

Internal Massage

Another benefit of exercise is that it can help to massage the intestines. Tummy crunches, side twists and forward bends are great exercises that massage the intestines so that they can relax in order to release their contents.

Increased Blood Flow

The blood is responsible for absorbing nutrients from the digested food and distributes it throughout the body. Any type of exercise is known to increase this blood flow, which is helpful not only for the digestive system, but for the overall health of the body as well.

Strengthens the Muscles

This is a no-brainer, but exercise will help to tone up the muscles around the stomach and intestines. Strong muscles will help the food to move along more efficiently and overall make it easier on the system.

Relaxes the Mind and Body

Another major benefit of exercise is that it helps to relax the mind and body. This is absolutely crucial for healthy digestion as any type of stress, whether physical or mental, will interfere with the way the food is digested and absorbed into the body.

Stress puts the body into a fight or flight motion, which stops the production of digestive juices required to break down the foods. It also shuts off the blood supply to the digestive tract. All the body's energy is then redirected to the stressed area or situation in order to help the body and mind to cope for the time being. As a result, the food can remain in the stomach for hours.

How to Exercise

There are a wide variety of exercises that one can take part in, however, it is important that each individual engages in an exercise that is suitable for him or her. Some might be able to go running for an hour, while others might only be able to walk for five to ten minutes. The key is to listen to body and exercise accordingly.

4. EFFECTS OF EXERCISE ON NERVOUS SYSTEM

Physical exercise boosts blood flow to your brain, quickly delivering more oxygen and nutrients to your neurons. Regular exercise is one of the best things you can do to keep your brain healthy and sharp -- plus it encourages new brain cell growth. If you are feeling tired, cranky or having a hard time focusing, just take a brisk walk! Have you ever heard the term, "runner's high?" It really is possible to feel that good, just from exercise! Exercise immediately boosts focus and mood while helping to reducing anxiety and cravings for food or other substances. It truly is the closest thing to a "happiness pill" that you will ever find.These conditions are particularly influenced by exercise:

Mood and Depression: Activating the same pathways in the brain as morphine, exercise stimulates the release of our feel-good neurotransmitters: norepinephrine, dopamine, and serotonin. Research shows that people who are depressed are more likely to be overweight, and conversely, that weight problems increase the risk for depression. Getting regular exercise will help you to get depression under control and lose the extra pounds—also boosting self-esteem and confidence -- all at once!

Anxiety: Physical activity of just about any kind and at any intensity level can soothe anxiety. In particular, high-intensity aerobic activity has been shown to reduce the incidence of panic attacks.

Focus and Attention: Vigorous exercise boosts brain blood flow and oxygenation, which immediately improves focus and concentration abilities. For those with ADD/ADHD, vigorous daily exercise is a must.

Sleep: Regular exercise is extremely beneficial for insomnia, but don't do it within 4 hours of hitting the sack. Vigorous exercise late in the evening may be too energizing and keep you awake.

Alzheimer's and Dementia: Studies show that exercise is helpful for boosting blood flow and activity in the parts of the brain linked to Alzheimer's and dementia, such as the hippocampus -- the brain's memory center.

So how much exercise should you get? I recommend that everyone do the equivalent of walking "like you are late" for 30-45 minutes, four to seven days a week. No brain injuries please! Avoid contact sports like football, hockey, boxing, and soccer (headers). Coordination exercises like dancing and table tennis require new learning, which are extra-beneficial for keeping you sharp as you age!

THE EFFECTS OF EXERCISE ON RESPIRATION

Respiration is an automatic bodily function and the quality of your breathing patterns is improved with exercise. When you think of breathing, you may think only of the inhaling and exhaling of air. Respiration includes the inhale, exhale and air exchange that happens in your lungs. Exercise lends to immediate and permanent changes in your respiration function.

Respiration

When you inhale, you bring oxygen from the air into your lungs. The oxygen attaches to red blood cells, enters your heart and then flows in your blood stream to your organs, muscles and body tissues. Carbon dioxide is a byproduct of respiration. When your blood returns to the lungs, the carbon dioxide is released from the blood stream into the air that you exhale.

Exercise

During aerobic exercises such as walking, cycling, swimming and dancing, your body requires increased amounts of oxygen. The oxygen helps convert fat stores into fuel for your workout. The result is also an increase in carbon dioxide to which your brain responds. The brain sends a signal to increase your respiration rate to keep up with oxygen demands and carbon dioxide exchange. The more intense your exercise, the faster your heart and breathing rates.

Breathing Patterns

Over time, with consistent aerobic exercise, your resting respiration rate slows. This is a result of enhanced respiratory muscle endurance and strength. With every breath, your air flow volume is improved compared with the volume prior to an exercise program. In other words, you become a more efficient breather. The American Journal of Respiratory and Critical Care Medicine also found this result to be true in those who suffer from chronic airflow limitation disorders.

Air Exchange

Another result of high-intensity endurance training is a more efficient air exchange. Oxygen is readily accepted into the lungs and bloodstream for transportation to the working muscles. Carbon dioxide is more effectively eliminated due to the improved respiratory muscle function. When oxygen and carbon dioxide exchanges are made at a high level, the body maintains equilibrium, which helps reduce stress and anxiety and improves mental and physical health.

UNIT – V: ORGANISING COMPETITIONS

Introduction

"Intramural" means "within the walls". Hence intramural competitions are the competitions held within an institution.

INTRAMURAL COMP`ETITIONS

Objectives

i. To develop the skills of the students in the concerned activities.
ii. To provide incentives for participation in activities.
iii. To provide opportunities for hundred percent participation among the homogenous groups, thereby contributing the greatest good.
iv. To develop leadership and followership qualities.
v. To give the best knowledge of the rules of the game and to develop desirable social qualities like co-operation, team work, respect for officials & opponents etc
vi. To give fun, pleasure and enjoyment.

The following objectives have also to be borne in mind

i. To give experience to the trainees in organizing and conducting the intramural competitions as a part of their training.
ii. To provide opportunities for the trainees to gain experience in officiating.

Methods of organizing and conducting intramural competitions

The following factors have to be taken into account in conducting the competitions.

1. Type of institutions (residential, non-residential etc).
2. Local and climatic conditions.
3. Facilities available (playground, equipment, leadership,etc).
4. Finance
5. Time at disposal
6. Activities in which students take major interest
7. Co-operation and help that can be expected from colleagues.

Units for competition

The students have to be divided in to several units for the purpose of the competition. The units must be of equal ability and strength. It is better to have 2 or 3 divisions in each unit so that competitions among

the highly skilled students can be separately conducted. The formation of the units depends upon the type of the institution.

a) Purely resident institutions

In this type of institutions, competitions can be conducted on inter-hostel or house basis. It can also be conducted on wing or dormitory basis.

b) Partially residential institutions

In this type of institution, students residing in the hostels will be divided into several teams and day scholars will be divided into few teams. The division of the day scholars into teams may be done on area basis.

c) Non-residential institutions

In this type of institution, the units may be formed in anyone of the following ways.

i. On class basis, among the particular grades (i.e.,) among the classes in the middle school stage, the high school stages etc.

ii. On index basis, students are divided into super seniors, seniors, juniors and sub-juniors according to their indices. Competitions are conducted among each particular division separately. This is one of the best methods of forming the units because this will be useful for the selection of students, for inter-school competitions.

iii. In colleges, the units may be either on class basis or on departmental basis.

Intramural committee

The conduct of the intramurals is to be given to an intramural committee. This committee will usually consist of the following..

1. The intramural director will always be the senior physical education teacher. He will be assisted by other physical education teachers of whom one may be appointed as an assistant director of intramurals. Further they will be assisted by class room teachers when competitions are held.
2. Student leaders will be members of the intramural committee. A secretary and joint secretary are to be selected or elected from among these unit leaders. It is the responsibility of this committee to frame rules and regulations for the competitions. It is the duty of the secretary to keep a record of the meetings held, the results of the competitions and the score sheets. Protests, if any, are to be decided by this committee.

Activities suitable for competitions

All major games, swimming, track and field, tumbling and pyramids, demonstration by each unit, defensive arts, rhythmic activities etc, are suitable for competitions. Although most of the above activities can be included in the program, it is better to decide the items in which competitions could be completed within the time at the disposal of the committee.

Time

Intramural competitions shall be conducted all through the year. There will be a heavy program of intramurals during the first and the second terms. During the third term there shall be a light program of intramurals because of the coming examinations.

The time best suited for competitions is after school hours and on holidays. The competition may be conducted either on league basis or knock-out basis.

Scoring

Points shall be awarded for each term of each unit for each activity according to the places they gain. The points gained by a team shall be credited to the unit. There shall be two score sheets, one to enter the points scored by each team in day to day competitions and the other a permanent or consolidated score sheet showing the points gained by each unit. The total points scored by each unit at the end of the competition will decide the intramural champions.

Awards

Some kind of recognition must be given to the winners in each activity and to the intramural champions. Separate shield for each activity and certificates to the winner of each activity may be awarded. The intramural honour board and certificates may be given to the intramural champions. A photograph of the champion unit may be taken and fixed to the honour board.

Points to be borne in mind for encouraging larger participation in intramural competitions

i. Fix the units for competitions on the basis of the classification obtaining in school(e.g.) Seniors
ii. Make the competition fair by arranging for balanced teams in each classified unit. Teams may be classified as A,B and C in each unit for each activity.
iii. Eliminate the members of the school teams from intramural competitions or distribute them
iv. equally to the different intramural teams.
v. Limit the number of activities in which a student can participate.
vi. Arrange competitions in a variety of activities making use of all facilities of the institutions.
vii. Award extra points for activities in which the students have less interest. vii. Give extra points for 100% participation.

viii. Frame the rules in such a manner that substitutes shall be put into the game for a specified period of time (For example: In the game of Football or Hockey, substitutes shall play at least for 10 minutes. In the game of Volleyball, substitutes shall play at least for 4 points or 4 side outs in a game).

ix. Give some award or recognition to the individuals and to the teams winning each activity and also to Intramural Champion team.

EXTRAMURAL COMPETITIONS

Extramural competitions are inter-institutional competitions. They give an opportunity for the representative members of the teams of the various institutions.

There are few benefits as well as drawbacks in the inter-institutional competitions.

Benefits

i. The standard of performance of participation will improve.

ii. Loyalty to the institution is developed.

iii. There is ample scope for the development of leadership, followership and sportsmanship qualities.

iv. New acquaintances and friendships become possible.

v. Participants acquire a good knowledge of the places they visit. **vi.** Participants derive pleasure, fun and enjoyment through healthy competitions.

Drawbacks

i. Sometimes questionable methods are adopted for the sake of victory. Teams try to win by fair or foul means.

ii. Unhealthy rivalry and jealousy are created.

iii. Too much of time, money and energy are wasted.

iv. There is too much of strain on the part of the students.

v. Some of the participants get puffed up with pride.

The above drawbacks can be easily rectified through proper leadership. Discipline among players must be enforced. However, good a player may be, if he does not turn up without valid reasons for regular training and practice, he shall be excluded from the team. This will have an adverse effect on the players and discipline can be easily maintained. A good leader should teach the participants respect for rules and regulations, officials, opponents etc.

Methods of organizing and conducting Extramural Competitions

a. Extramural competitions may be classified and studied under three heads. They are as follows:

i. Practice matches
ii. Closed competitions
iii. Open competitions

i. Practice Matches

Practice matches may be arranged with neighbouring institutions of a given locality and played. It is advisable to fix the dates and venues of the matches before hand.

ii. Closed competitions

These are the competitions limited to particular types of institutions. For example: Inter school competitions, Inter collegiate competitions etc.

Generally inter school competitions are conducted by the district school athletic association. All the schools in a district become members of the association by paying the affiliation fees. An executive committee of the association consisting of a President, Secretary, Joint Secretary, Treasurer, and few members will be formed. The district will be divided into few zones and the schools in each zone will compete among themselves. For the conduct of the competitions in each zone, zonal secretary may also be appointed by the association. After the completion of the competitions in each zone the zonal winners will meet with one another in the Inter Zonal competitions for district championship. If time and funds permit, Inter District competitions may also be conducted.

Similarly the affiliated colleges of a particular University may be brought under a few divisions. The colleges in a particular division will compete among themselves to decide the divisional winners. Then the Inter-divisional competitions may be conducted to decide the University champion.

iii. **Open competitions**

These are competitions open to all irrespective of the types of the institutions; for example, competitions conducted by the private agencies, the state associations etc.

SPORTS MEET

Sports meet are generally of two kinds

1. Standard sports meet
2. Non standard sports meet

STANDARD SPORTS MEET

Method of organizing and conducting a standard sports meet

The conduct of a sports meet will involve a lot of planning and preparation. The assistance and co operation of several individuals will be required for the successful conduct of the sports meet. The work involved in the organization and the conduct of the sports meet may be studied under 3 heads.

1. Pre meet work
2. Meet work
3. Post meet work

i. Pre meet work:

The following committees have to be formed to conduct the meet efficiently.

1.Organizing committee

This shall be responsible for the successful and smooth conduct of the meet. Several subcommittees shall function under this committee.

2. Committee for publicity

This shall announce the date, the place, the events etc, of the meet through press and other sources.

3. Committee for grounds and equipment

It shall secure the grounds and make arrangements for the proper laying out of track and field. They are responsible for necessary equipment and other materials for the meet.

4. Committee for the officials

It should write to various persons competent to officiate the track and field events and get their acceptance. It may arrange for presiding officer in consultation with the organising committee.

5. Committee for accommodation and seating arrangement

This committee is responsible for the accommodation of the competitors and officials coming from outstation. It is responsible for seating arrangements at the athletic arena for competitors, officials, spectators, guests etc. Arrangements should be made for the parking of cars, cycle etc.

6. Committee for reception

This is responsible for receiving special invitees on the day of the meet and taken to the seats reserved for them.

7. Committee for decoration and ceremonies

This is responsible for decorating the arena and making necessary arrangements for the opening ceremony, victory ceremony and closing ceremony of the meet. This committee may arrange for trophies and other awards.

8. Committee for refreshments and entertainment

This committee's responsibility shall be supplying of refreshments and drinks to the competitors, officials, special invitees etc. They can arrange for some entertainment program at the end of the meet on each day.

9. Committee for entries and programme.

It shall send entry forms early, receiving them in time, allotment of numbers for competitors, arrange the heats, fill in the record sheets with the names and numbers of competitors for the respective events and prepare the program for the meet.

The program may be prepared in the following order.

a) On the cover page the name of the institution, the name of the presiding officer, the date of the sports meet etc.
b) The names of the members of the various committees,
c) The names of the officials ,
d) Number and names of the competitors according to clubs/houses/institutions.
e) Order of events
f) Previous records of the events
g) Consolidated score sheet.

ii) Meet Work

The officials should report for the meet early. They should be given the badge, copies of programs and concerned record sheets. The competitors shall receive their numbers, program copies and necessary instructions. The meet shall be started with an opening ceremony which consists of March past of the athletes, declaring the meet open, Olympic torch and Olympic oath taking. Then the events shall be conducted according to the program. The victory ceremony will take place as soon as the event is over. After the conduct of all the events as per the program, all the competitors shall assemble for the closing function when the presentation of the trophies, certificates etc, shall take place. With the singing of the national anthem, the meet will come to a close.

iii) Post Meet Work

After the meet is over, it is necessary to settle all the accounts and to return the equipments and other materials borrowed from others. Further thanks giving letters shall be sent to those who helped in the conduct of the meet.

NON-STANDARD SPORTS MEET

Non-standard sports meet is one in which standard rules are not followed but some special rules are framed according to convenience with a view to promote larger participation. This kind of sports meet

requires a little time, facilities, leadership etc. There is no credit for individual performance, but importance is given to the teams or groups.

There are a few kinds of non-standard sports meets. They are

(A) Mass or Team athletics,

(B) Handicap sports,

(C) Tele-graphic sports and

(D) Tabloid Sports.

A. Mass or Team Athletics

Mass or Team Athletics will be a suitable programme when a larger number of students report for Athletics. The students may be divided into a few teams for the purpose of competition. If 100 students report, they may be divided into four teams each comprising of 25 students. Competition may be conducted in some of the athletic events and the points may be awarded in the order of their performance.

The following methods may be adopted in conducting Mass or Team athletics:

For Track Events

1. Follow-on Method

Divide the students into a few teams of equal strength One student from each team will have to start with a baton in his hand from the starting line of an oval track. He shall make a lap and pass the baton to the second person of his team. The second person shall make a lap and pass the baton to the third person of his team and so on. Thus the members of the respective teams run and finish the race.
According to the order of their finish, points may be awarded.

2. Shuttle Method

Two lines are to be drawn, 100 meters apart. Each team may be divided into two halves, each half being stationed behind each of these lines. On signal, the teams will run a shuttle relay and finish the race. The points are awarded according to the order of their finish.

3. Zonal Method

Draw a starting line. From the starting line fix 3 zonal distances by drawing lines at distances of 75 meters, 85 meters and 100 meters to indicate the zones A, B and C respectively.
Fix a time for running (e.g.) 13 seconds. Award points according to the zonal distances covered by the respective individuals within the fixed time as indicated below:

1. Those who do not cover even zone A within 13 seconds : 0 point
2. Those who cover only zone A within 13 seconds : 1 point
3. Those who cover only zone B within 13 seconds : 2 point
4. Those who cover only zone C within 13 seconds : 3 point

Fix two or three zonal distances, (e.g.) 50', 60', 70' and allot points for each zone (i.e.) I point to those who throw between 50' and 60' distance, 2 points for a throw between 60' and 70' distance and 3 points for a throw of 70' and above. Add the points scored by the individual members of each of the teams to decide the winner.

B. **Handicap Sports**

This is conducted with a view to give a chance to the weaker boys to participate with interest. For Example, if a 100 meter race is to be run, the good runners have to cover the whole distance, but the weaker boys may be made to start from a specified distance ahead of the scratch line of the race. This gives a reasonable change for the weaker boys to try their best to win and at the same time the good runners are obliged to fight hard to win the race.

C. **Telegraphic Sports**

Competition in certain items may be conducted at different places and the results of performance at each place will be telegraphically communicated to a central authority which decides the winner by comparing the performance at each place. This method, no doubt saves time and money, but there is one disadvantage (viz.) the conditions at each of these places may vary which may affect the performance.

D. **Tabloid Sports**

This kind of sports is conducted for finding out the all round efficiency of individuals. Usually we will find in a class, boys who are good, average and poor. It is necessary to have competitions separately among these 3 types. It is for this purpose that Tabloid sports may be conducted.

In this sport certain standards are fixed for each type of pupils. Each standard may be called by a Ribbon. Hence this sport may also be called Ribbon test. Usually 3 types of standards are fixed. Therefore it is called Triple Tabloid sports. If we conduct a triple tabloid sports fix the standards as follows:

EVENTS	**BLUE**	**RED**	**GREEN**
100 mts Dash	12.5 secs	13.0 secs	13.5 secs
High Jump	4'6"	4'3"	4'
Shot put(12 lbs)	30'	27'	25'

These events and standards are to be announced well ahead. Each boy must give his name for a particular standard. In fixing the standards, the teacher must use his discretion and fix a standard neither too high nor low. A boy who competes for a particular standard or ribbon must come up to the standard fixed for all the events. If he fails to reach the standard even in one event he will be awarded the

ribbon. These sports may be conducted on team basis also. In this case the result may be determined for a team in any one of the following ways.

1. The number of ribbons won by each team . The team that wins the maximum number will be declared the winner.
2. Awarding points for each type of ribbon. Total the points scored by each team and decide the winner.

TOURNAMENTS

A Tournament is a competition held among various teams in a particular activity according to a fixed schedule where a winner is decided.

Tournaments are of various types.

1. Knock-out or Elimination Tournaments.Single knock-out or single elimination.
2. League or Round Robin Tournaments.Single league.
3. Combination Tournaments.
4. Challenge Tournaments.

In deciding the types of the tournament to be conducted the following factors have to be taken into consideration:

(i)Season

(ii) Time at disposal

(iii) Grounds and Equipment

(iv) Type of the activity

(v) Officials and

(vi) Finance

KNOCK-OUT OR ELIMINATION TOURNAMENTS

Single Knock-out or Single Elimination.

In this Type of Tournament the teams that are once defeated are eliminated immediately and they will not be given another chance to play. The total number of matches to be played in this tournament will be n-1 (i.e.) number of teams competing minus 1. For example, if 10 teams are competing the total number of matches will be 10-1 = 9.

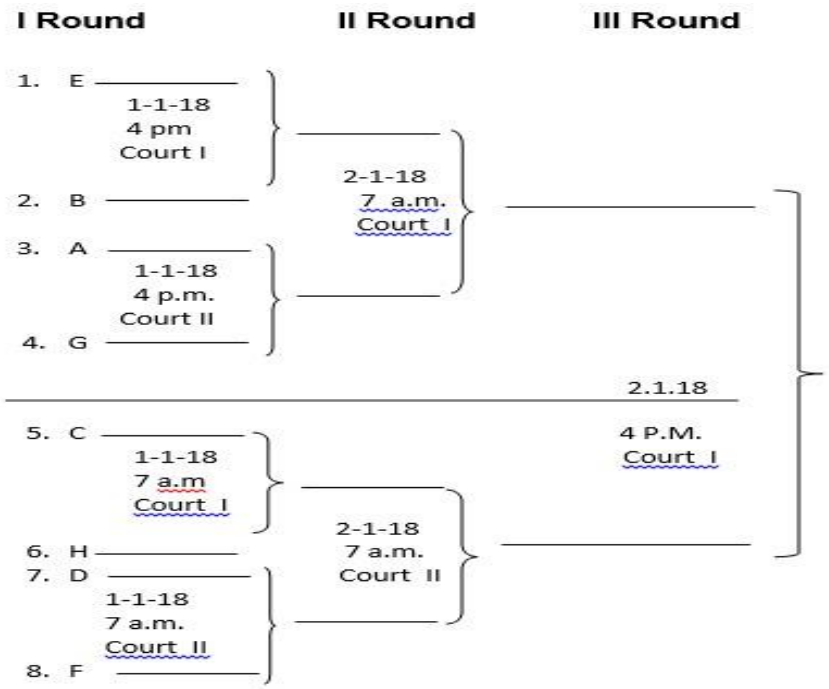
METHOD OF DRAWING FIXTURES

Drawing fixtures for a certain number of teams competing, the number being the power of TWO (viz), 2 $2^2 2^3 2^4 2^5 2^6$ etc. (i.e.) 2, 4, 8, 16, 32, 64 respectively.

Suppose 8 teams A, B. C, D, E, F, G& H have entered for a tournament, the fixtures have to be drawn in the following manner:

Write on a sheet of paper the serial numbers 1 to 8. Take uniform slips of paper, write the name of one team in each slip and fold or roll each of these slips in a uniform manner. Then draw lots one by one. As each slip is taken find out the name of the concerned team and enter it serially on the sheet. Thereafter from the TOP they should be bracketed in pairs for the first round. Then the other rounds also should be bracketed from the top. In each bracket the date, time and place of the match may be indicated as shown below.

Single knock-out fixture for 8 Teams



In the above example the teams E, B, A & G have fallen in the upper half and C, H,D& F in the lower half.

(b) Drawing fixtures for a certain number of teams competing, the number not being the power of TWO (viz) 3,5,6,7,9,10,11,12,13,14,15,17 to 31, 33 to 63, 65 etc.

In this case while drawing fixtures, "BYES" have to be given to a specific number of teams in the first Round so that in the subsequent rounds the number of teams shall be brought to the power of TWO. BYE is a privilege given to a team (generally by drawing lot) exempting it from playing a match in the first round.

Byes are usually given in the first round because,

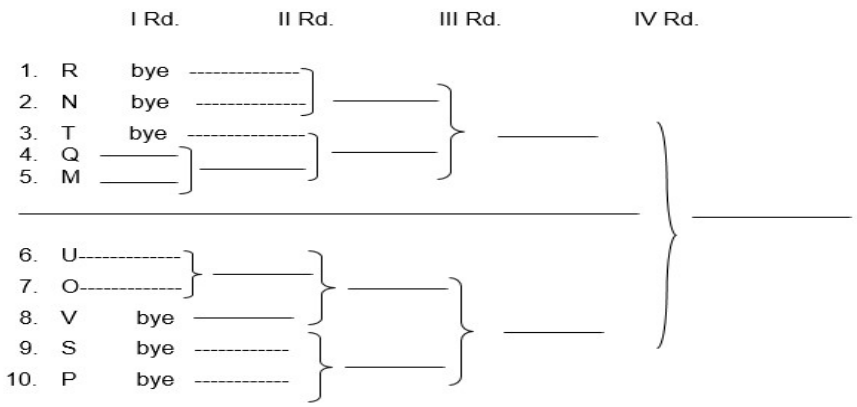
a) a rest before a competition is not so advantageous as a rest after a match;

b) the intensity of competition may not be of a high degree in the first round.

The number of "Byes" to be given shall be decided by subtracting the number of teams from its next higher number which is the power of two. For example, if 10 teams have entered for a competition the next higher number above 10, which is the power of Two is 16. Hence, the number of Byes to be given shall be 16-10 = 6.

We shall now deal with the method of drawing fixtures for 10 teams M, N, O, P, Q, R, S, T, U& V that have entered for the competition.Write on a sheet of paper the serial numbers 1 to 10. We know that the number of byes to be given is (16-10) = 6. Hence at first we have to draw lots for giving byes. Use slips of paper for drawing lots. As each slip is taken find out the name of the concerned team receiving the benefit of bye and enter it alternately in the lower half and in the upper half of the fixtures. Suppose the order in which the lots are drawn for byes is P, R, S, N, V & T, they have to be entered alternately in the lower half and in the upper half of the fixture. P is entered in the serial number 10; R in 1; S in 9; N in 2; V in 8; and T in 3 (as shown in the example given below). The serial numbers 4, 5, 6 & 7 are vacant. The teams M, O, Q & U are not yet entered in the fixture. Now lots are to be drawn for these four teams. Suppose the order drawn is Q, M, U & O, they have to be entered in the vacant numbers from the top, in the order in which they are drawn. Then these teams that are not given byes are bracketed in pairs and they play in the first round while the teams that got the byes will be playing in the second round. For the second and the subsequent rounds the teams in pairs should be bracketed, starting from the Top. See the fixture given below.

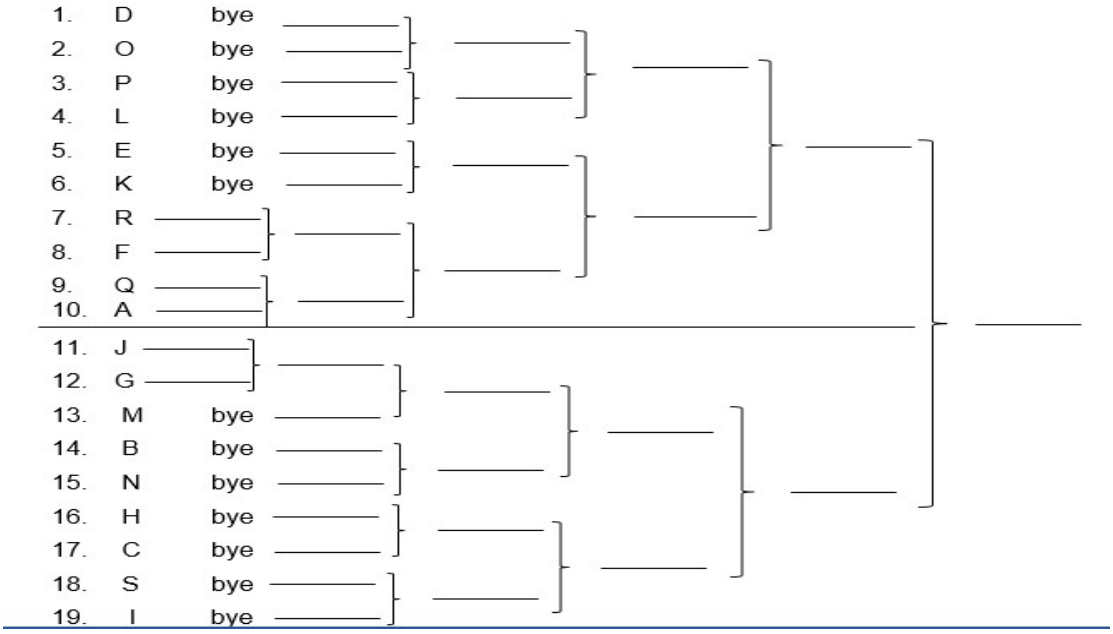
Single knock-out fixture for 10 teams



Example for single Knock-out fixture for 19 teams

Number of Byes 32-19=13

I Rd. II Rd.III Rd. IV Rd. V Rd.



Method of determining the number of teams in the Upper half and in the Lower half.

(a) When there are even number of teams } n/2 in the Upper half
n/2 in the Lower half

(n indicates the number of teams)

Example :- 10 teams 10/2 i.e., 5 in the Upper half
10/2 i.e., 5 in the Lower half

(b) When there are odd number of teams

$\frac{n \text{ plus } 1}{2}$ in the Upper half

$\frac{n \text{ minus } 1}{2}$ in the Lower half

Example :- 19 teams $\frac{19 \text{ plus } 1}{2}$ i.e., 10 in the Upper half

$\frac{19 \text{ minus } 1}{2}$ i.e., 9 in the Lower half

Method of determining the number of byes to be given in the Upper half and in the Lower half.

(a) When there are even number of byes } nb/2 in the Upper half, nb/2 in the Lower half

(nb indicates the number of byes)

Example :-6 byes — 6/2 = 3 in the Upper half, 6/2 = 3 in the Lower half

(b) When there are odd number of byes — $\frac{\text{nb minus 1}}{2}$ in the Upper half, $\frac{\text{nb plus 1}}{2}$ in the Lower half

Example:- 13 byes — $\frac{13 \text{ minus } 1}{2} = 6$ in the Upper half, $\frac{13 \text{ plus } 1}{2} = 7$ in the Lower half

Merits and Demerits of Single Knock-out or Elimination Tournaments

Merits:

i. The tournament can be finished in a short time.

ii. There will be economy of expenditure.

iii. The competition will be keen and intense because of the fear of elimination of a team from the tournament, the moment it is defeated.

Demerits :

i. A team may get itself eliminated by chance or by accident and it will not have another chance to play and show its worth.

ii. A winner of a match in a particular round may have to wait to meet the winner of another match of the same round or the previous round.

iii. If a fixture is drawn purely by lots the fixture may become defective since there is the possibility of the strong teams being matched together in the earlier rounds and got eliminated, thereby giving room for the weaker teams to move to the semifinals and the finals.

LEAGUE OR ROUND ROBIN TOURNAMENT

Single League:

In this type, every team shall play once with every other team. The total number of matches in a single league shall be n (n-1) ÷ 2. For example, if 8 teams are competing, the number of matches shall be 8 (8-1) ÷ 2 = 28.

Double League:

In this type, every team shall play twice with every other team. The total number of matches in a double league shall be n (n-1).

Merits and Demerits of League Tournament.

Merits:

i. It decides the true winner.

ii. Greater number of matches can be played by the teams.

iii. It helps in ranking all the competing teams.

iv. The teams need not wait for the completion of the other rounds as in single elimination tournament.

Demerits:

i. It involves lot of time and facilities.

ii. Teams that get defeated often will lose interest in the game.

Method of drawing fixture for Single League

1. Cyclic Method

Fixture for 6 Teams :- No. of matches $\frac{6\,(6-1)}{2} = 15$

I Rd.	II Rd.	III Rd.	IV Rd.	V Rd.
6 – 1	5 – 1	4 - 1	3-1	2-1
5 – 2	4 – 6	3 – 5	2-4	6-3
4 – 3	3 – 2	2 – 6	6-5	5-4

Fixture for 7 Teams:- No. of matches $\frac{7\,(7-1)}{2} = 21$

I Rd.	II Rd.	III Rd.	IV Rd.
7 – bye	6 – bye	5- bye	4 - bye
6 – 1	5 – 7	4 - 6	3 - 5
5 – 2	4 – 1	3 – 7	2 - 6
4 – 3	3 – 2	2 – 1	1 - 7

V Rd.	VI Rd.	VII Rd.
3 – bye	2 – bye	1 - bye
2 – 4	1 – 3	7 - 2
1 – 5	7 – 4	6 – 3
7 – 6	6 – 5	5 – 4

In drawing the fixture according to cyclic method, fix number 1 in the case of even number of teams and fix bye in the case of odd number of teams and rotate the other numbers clockwise as shown in the above fixtures. The total number of rounds in a single league tournament shall be as follows,

i. for even number of teams, n-1 rounds.

ii. for odd number of teams, n rounds.

(n represents number of teams)

TABULAR METHID

Fixture for 6 teams

	A	B	C	D	E	F
A		1	2	3	4	5
B			3	4	5	2
C				5	1	4
D					2	1
E						3
F						

Fixture for 7 teams

	A	B	C	D	E	F	G	bye
A		1	2	3	4	5	6	7
B			3	4	5	6	7	2
C				5	6	7	1	4
D					7	1	2	6
E						2	3	1
F							4	3
G								5
bye								

In this method the fixtures are drawn in a tabular form.The number of columns to be drawn horizontally as well as vertically shall be as follows,

i. for even number of teams, n+1 columns ii.

ii. for odd number of teams, n+2 columns

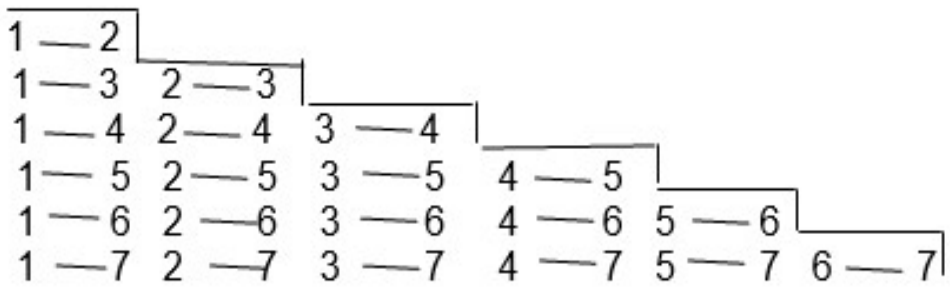
Having drawn the required number of columns (horizontally and vertically) draw a line diagonally from the left top-most corner to the opposite corner. Then enter the teams (and bye if needed) in the squares of the top-most horizontal column and also in the squares of the first vertical column as shown in the diagram. The squares that fall on one side of the diagonal line except the squares in the BYE column indicate the matches to be played in a single league. The numbers that are entered in the squares indicate the particular rounds in which the concerned teams have to play. The dates on which the matches of a particular round can be played may be entered in the concerned squares.

Procedure for entering the numbers inside the squares Indicating the rounds

In the squares of the horizontal column immediately below the teams, enter the numbers serially from number I onwards. The number in the last square of that horizontal column indicates the maximum number of rounds for the league (see the examples given above). Then in each vertical column (except the last vertical column) enter the numbers serially starting from the number next to that found at the top. The serial numbers to be entered in any of the squares should not exceed the number indicating the maximum number of rounds. The entry of numbers in the squares of the last vertical column will be as follows.

Note the number entered in the top square of this column. In the next square enter number 2. Then proceed entering numbers in the other squares every time adding 2, (I.e., 4, 6, etc.) until the number becomes 1 less than the number at the top-most square. After this, enter number 1 in the next square and proceed entering the numbers in the other squares every time adding 2, (i.e., 3, 5, etc.) until the bottom-most square is filled up. It may be noted that the number of the bottom-most square will be 2 less than the number at the top-most square.(see the examples given)

2 Stair case method



The fixture can also be drawn as shown above, but there are certain draw-backs. (viz)

i. It does not indicate the number of rounds to be played.

ii. It is not so easy to fix the dates for the matches of the concerned rounds as in the case of either the Cyclic Method or the Tabular Method.

Method of deciding the Winner in a League Tournament

The winner of the league tournament will be decided on the basis of the points scored by the respective teams. Generally points are awarded as follows:-

For a win…….. 2 points

For a defeat….. 0 points

For a draw……. 1 point (each)

The team that gets the maximum number of points will be declared the winner. In case of a tie it shall be broken according to the rules framed by the tournament authorities prior to the commencement of the tournament.

We suggest below a procedure for breaking a tie in a league tournament.

i. The team that has won over the other in the regular league tournament shall be awarded the higher place.

ii. If the tie still remains because of a drawn game among the tying teams, the team that has won greater number of matches in the regular league tournament shall be awarded the higher place.

iii. If the tie still remains, it shall be decided by considering the score (goals or points)

iv. for and against obtained by the tying teams in the whole tournament and the team that has obtained the greater balance of score shall be awarded the higher place. (see the example given below

Team	Game	Score for the whole tournament		Balance	Winner
		For	Against		
A B	Football Football	12 16	6 12	6 4	1st- 2nd
X Y	Basketball Basketball	149 120	85 80	64 40	1st- 2nd

iv. If the tie still remains and:

i. If it concerns the first place, the tying teams shall play again to decide the winner. If a replay is not possible the winner may be decided by a toss, though not desirable.

ii. If it concerns any other place, the teams shall be awarded the same place.