

YMCA COLLEGE OF PHYSICAL EDUCATION
CHENNAI-35

ASSIGNMENT
ON
DOPING

SUMMITTED
BY
JIJINO JOHN
ROLL:NO: 028

SUBMITTED
TO
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SUBMITTED
ON
12/11/20

NANDANAM
CHENNAI-35

✓
4/5
15/11/2020

“Doping”:

Although attempts to enhance athletic performance are probably much older, the word “doping” was first mentioned in 1889 in an English dictionary. It described originally a mixed remedy containing opium, which was used to “dope” horses. “Dope” was a spirit prepared from the residues of grapes, which Zulu warriors used as a “stimulant” at fights and religious procedures and which also reportedly was called “doop” in Afrikaans or Dutch. Later, the meaning of “dope” was extended in a broader sense to other beverages with stimulating properties. The expression was introduced into English Turf Sport about 1900 for illegal drugging of racehorses.

The origin of the term doping is controversial, but it seems to have come from a South African dialect. For the Boers, it means an infusion used in religious Festivities the “doop.” And according to Burstin, during the construction of the North Channel in Amsterdam, workers used the term Doopen when referring to increasing their capacity to work. In 1889, the term doping appeared in an English dictionary, meaning “a drug used to stimulate horses.” From the horses in the hippodrome, the term soon began to be applied to people in the stadiums. The modern definition of doping, as used by the World Anti-Doping Agency (WADA) in 2000, is any substance or method that (a) is used to increase the performance of an athlete, (b) is harmful to the health of the athlete, or (c) is against the values of the game. When two of these three conditions are present, a substance or a method may be banned by inclusion in the “List of Forbidden Substances” of the WADA.

Definition of doping:

- The use of a substance (such as an anabolic steroid or erythropoietin) or technique (such as blood doping) or technology to illegally improve athletic performance.

- 1933 Beckmanns Sport Lexikon

Doping, the use of stimulating (performance enhancing) agents, which shall push the athlete beyond his/her normal limits of performance.

- 1977 German Association of Sport Physicians (Deutscher Sportärztebund)

Doping is the attempt at unphysiological enhancement of performance of an athlete by application (intake, injection or administration) of a doping substance by the athlete or an assisting person (e.g. team leader, coach, physician, nurse or physiotherapist) prior to a competition and, for the anabolic hormones, also during training.

- 1988 International Olympic Committee

Doping is the use of substances from the prohibited classes of agents and the use of prohibited methods.

- The administration to or the use by, a competing athlete of any substance foreign to the body or any physiological substance taken in abnormal quantity or by an abnormal route of entry into the body, with the sole intention of increasing in an artificial and unfair manner his performance in competition. - (Houlihan 1999: 130)

- The modern definition of doping, as used by the World Anti-Doping Agency

(WADA) in 2000, is any substance or method that (a) is used to increase the performance of an athlete, (b) is harmful to the health of the athlete, or (c) is against the values of the game.

GENETIC DOPING:

The World Anti-Doping Agency (WADA) defines genetic doping as “the non-therapeutic use of genes, genetic elements, and/or cells that have the capacity to enhance athletic performance”. Genetic doping is used to explain the potential misuse of gene therapy as a performance-enhancing agent (18). The problem of genetic doping was discussed for the first time in 2001 Commission of International Olympic Committee (IOC) that argued the use of gene therapy in sports. In addition, WADA discussed genetic development in sports at Cold Spring Harbor in New York and included the gene doping in 2004 WADA prohibited list and World Anti-Doping Code. Both the WADA and the International Olympic Committee (IOC) have expressed some topics about the possibility of genetic doping in sports.

Accordingly, the method of genetic doping has been included in the list of illegal classes of substances and prohibited methods. In the latest updated of prohibited list of WADA (2010) the transfer of cells or genetic elements (e.g. DNA, RNA, Peroxisome Proliferator Activated Receptor δ [PPAR δ] agonists [e.g. GW 1516] and PPAR δ -AMP-activated protein kinase [AMPK] axis agonists [e.g. AICAR]) and the use of pharmacological or biological agents are prohibited. Genetic doping may be an enticing method for athletes to enhance performance because current technology does not detect genetic doping in humans. Since an actual gene is added to the body, It is nearly indistinguishable from naturally occurring genes. This is unlike traditional doping methods, which are detectable when a desired substance or hormone is added to the body. Genetic doping causes the body to naturally produce desired substances. Not only are the genetic changes nearly undetectable, but they are also permanent. If an athlete was enhanced by genetic doping, she would not have to worry about obtaining drugs or steroids, storing them, hiding them, taking them routinely, suffering side effects, or testing positive in blood and urine tests. Athletes could implement genetic doping in a variety of ways. Some athletes with injuries in a particular part of the body might use genetic doping to promote muscle growth in order to speed healing and repair damaged muscles. Others might use it to strengthen a muscle they consider weak, thus creating an advantage over others who have untreated weaknesses. Athletes desiring to enhance performance by increasing their number of red blood cells might choose to inject themselves, not with EPO itself, as in the past, but with the gene that produces the EPO, causing the body to naturally produce more red blood cells.

WADA held the Banbury Conference in New York in 2002 specifically to discuss the issue of Genetic doping. The conference was attended by leaders in both sports and science. Richard W. Pound, WADA’s president, believes that being proactive, rather than reactive, regarding genetic doping is imperative. The conference thus aimed to enhance awareness of genetic doping and to disseminate information between scientists and members of the sports world, with the overarching goal of preventing genetic doping. As a result, genetic

doping made its debut on WADA's 2003 Prohibited List of Substances and methods.

In 2004, WADA also formed a genetic doping panel composed of five of the top researchers in various fields of genetics. The panel advises WADA's Health, Medical and Research Committee to provide the committee with current information on advances in Genetic doping. WADA is currently sponsoring a number of projects aimed at the detection of genetic doping. For instance, WADA has engaged the very individuals who created genetic therapy to find a way to detect it in genetically doped athletes. In collaboration with the Karolinska Institute and the Swedish Sports Confederation, WADA in December of 2005 held a workshop referred to as the Stockholm Symposium. The workshop announced the Stockholm Declaration on Gene Doping, which makes recommendations regarding procedures, progress, and educational goals.

Risks of Gene Doping:

The aspect of gene therapy that causes the most concern is the known and unknown health risks. It is not possible to know the results of using gene therapy for healthy people. It is very likely that it would bring a lot of health problems.

Artificially increasing EPO levels in healthy people will increase the amount of red blood cells and therefore viscosity, which in turn will increase the risk of heart attack and paralysis. As the blood thickens, it will become difficult for the body to successfully pump blood to all tissues of the body, causing clots wherever vessels cannot compensate for this increased density. It is possible that unknown EPO users also use blood thinning drugs, which can lead to other health problems.

The use of a gene for IGF-1 or removal of the gene for myostatin causes differentiation in the muscle. The muscles would likely become disproportionately strong and pulling on surrounding tendons and bones that might cause tears or fractures.

Integration of viral vectors into the host genome carries the risk of insertional mutagenesis. Abnormal regulation of cell growth, toxicity from chronic over-expression of the growth factor and cytokines, and malignancy are all theoretically possible dangers.

TECHNOLOGICAL DOPING:

The future already has an undeniable grasp on sports: every year, the latest high-tech breakthroughs are used to technologically improve and enhance sports equipments and materials and having certainly not, of course, the aim of cheating! Technological doping is no longer about improving the athlete's performance but improving the performance of his equipment – usually a mechanical device – using hidden technological devices.

Technology doping is defined as “the practice of gaining a competitive advantage using sports equipment,” and is under the jurisdiction of the governing authority of each sport.

The World Anti-Doping Agency (WADA) considers prohibiting technologies if they

are “performance-enhancing” or “against the spirit of the sport“.

- One of the most famous cases of technology doping was the LZR swimsuit introduced in the 2008 Olympics. This suit enhanced swimmer performance so well that it was banned by FINA (the governing body) after the Olympics. For perspective, swimmers wearing this suit made 23 out of the 25 world records that were achieved at the 2008 Olympics. The suit allowed for better oxygen flow to muscles, but also trapped air to add buoyancy. Quite the feat of engineering by Speedo, but a little too much according to the governing body. Almost every swimmer at the Olympics that year had this suit.

- The American, Canadian, and Russian freestyle ski teams all had their uniforms (see photo on the right) made by Columbia Sportswear Company. Columbia employed not only a new (and very cool) zipper design to cut

down on weight, but also a snow camouflage pattern that helps mask body movement.

- The American speed skaters are wearing uniforms made by a partnership between Lockheed Martin, an aerospace company, and Under Armour. The suit uses several tested methods of dealing with wind resistance to hopefully shave seconds off of the time of a skater. Canada is in the arms race as well with a suit designed by APOGEE and wind tunnel tested by engineers at the Canadian National Research Council.

SIDE EFFECTS OF DRUGS:

Drugs are chemical substances which, by interaction with biological targets, can alter the biochemical systems of the body. For example, drugs such as ephedrine can lead to an increase in the force and rate of beating of the heart; amphetamines can produce changes in mood and behaviour; drugs such as insulin interact with metabolic processes in the treatment of disorders such as diabetes.

All drugs produce side effects. Some of these side effects occur at normal, therapeutic dose levels whilst other side effects are experienced only at higher doses. In many instances, where athletes misuse drugs for doping, they take doses far in excess of those required for therapeutic purposes and in so doing increase the risk of toxic side effects. Predictable side effects associated with some of the drugs that are commonly misused in sport are shown in Table 1.5.

Non-predictable toxicity can occur following the administration of therapeutic or even sub-therapeutic doses of drugs. An example of this is idiosyncrasy where a drug produces an unusual reaction, normally genetically determined and often due to a biochemical deficiency. This over-reaction to the drug may be due to an inability to metabolise the drug.

A second type of non-predictable toxicity is drug allergy. Patients will only exhibit allergic reactions after previous exposure to the drug or a closely related chemical which sensitises the patient. The drug combines with a protein within the body to produce an antigen, which, in turn, leads to the formation of other proteins called antibodies. Subsequent exposure to the drug will initiate an antigen-antibody

reaction. This allergic reaction can manifest itself in a variety of ways. An acute

reaction is known as anaphylaxis and normally occurs within one hour of taking the drug. This response frequently involves the respiratory and cardiovascular systems and is often fatal. Sub-acute allergic reactions usually occur between one and twenty-four hours after the drug is taken and the most common manifestations involve skin reactions, blood dyscrasias, fever and dysfunctions of the respiratory, kidney, liver and cardiovascular systems. Examples of drugs known to produce such allergic responses are aspirin and some antibiotics including penicillins and cephalosporins.

DIETARY SUPPLEMENTS:

The range of products that collectively form the sports supplement industry are described by terms such as “dietary supplements”, “ergogenic aids”, “therapeutic nutritional supplements” or “sports supplements”. They are supposed to provide a known nutrient requirement to optimise training or competition performance (sports drinks or bars, carbohydrate gels), to contain nutrients in large quantities in order to treat a known nutritional deficiency (iron supplements) or to directly enhance performance or maintain/restores health and immune function (creatine, caffeine, ginseng).

A dietary or nutritional supplement is defined as a commercially available product that is consumed as an addition to the usual diet and includes vitamins, minerals, herbs (botanicals), amino acids and a variety of other compounds.

The Australian Institute of Sport has developed a classification system that ranks sports supplements into groups based on scientific evidence and other practical considerations that determine whether a product is safe, legal and effective at improving sports performance. There are four categories of sports supplements in this system:

1. Group A Supplements—there is sufficient scientific evidence to recommend these supplements in specific situations using evidence-based protocols.

2. Group B Supplements—research is promising regarding the benefits of these supplements, but it is inconclusive to date and these supplements should only be used if they are part of a research project or when it is possible to monitor how athletes respond.

3. Group C Supplements—there is very little scientific evidence that these supplements are beneficial and supplements in this category are generally not recommended.

4. Group D Supplements—these supplements are either banned or are at high risk of contamination with substances that could lead to a positive drug test and are definitely not recommended for athletes.

Traditional supplements

• Nitrate

Evidence suggests that nitrate is the viable active component within beetroot juice and other vegetables, responsible for health promoting and ergogenic effects . Indeed, multiple studies support Nitrate supplementation as an effective method to improve exercise performance in some circumstances. Nitrate supplementation, either as beetroot juice or sodium nitrate, has also demonstrated benefits relating to cardiovascular health such as decreasing blood pressure, increasing blood flow and enhancing the driving pressure of oxygen in the microcirculation of exercising tissue.

Omega-3 fatty acids

Omega-3 fatty acids exert a variety of physiological actions including triglycerides lowering, reduction of inflammatory indices, immunomodulation, antithrombotic effects and possibly promotion of exercise performance by modifying membrane physicochemical properties, gene expression and eicosanoid metabolism.

• Beta-Alanine

Beta-Alanine has become very popular among athletes needing to repeat sprints at a high intensity. In addition to paraesthesia, the WHO reports some cases of pruritus or itching following b-alanine consumption.

Emerging supplements

• Higenamine

Higenamine, also referred to as norcoclaurine, is a plant-based compound used in Chinese herbal medicine. Higenamine is found naturally in the root of *Aconitum japonicum* as well as in other plants. This molecule has been used to improve cardiac left ventricular function and to stimulate β -adrenergic receptors, thereby stimulating lipolysis and thermogenesis [37]. Oral use of higenamine is now beginning to receive attention from the dietary supplement community, as a potential agent to be included within weight loss and sport performance supplements.

• Creatine nitrate

Creatine monohydrate is a very popular nutritional supplement for its ergogenic effects, and its safety has already been confirmed previously [41]. However, with each novel form of creatine that emerges (Table 2), its safety must be verified.

• Guanidinoacetic acid

Guanidinoacetic acid, also known as glycoamine or guanidinoacetate, is the natural precursor of creatine, and is under investigation as a novel dietary agent. Guanidinoacetic acid was first identified as a natural compound in humans

approximately 80 years ago. Its use as a therapeutic agent began in the 1950s. Guanidinoacetic acid has recently attracted new interest as a dietary additive because of its effect on creatine biosynthesis and its high stability in aqueous solutions. The safety of dietary Guanidinoacetic acid has been evaluated from the beginning of its use in human studies with only minor disturbances in the gastrointestinal tract such as mild nausea, loss of appetite, abdominal bloating and diarrhoea.

• **Multiingredient supplements**

Multiingredient supplements have become increasingly popular in recreational and competitive athletes. Although many ingredients used in those supplements have had their safety assessed separately, the interactions when combined are less understood. Recently, four different preworkout supplements were tested that contained: creatine, Betaine, vitamin C, dendrodium extract and caffeine; caffeine, creatine, b-alanine, amino acids and Vitamins B; caffeine, creatine, nitrate-bound Amino acids, b-alanine and vitamins ; caffeine, b-alanine and nitrate.

IOC LIST OF DOPING CLASSES AND METHODS

I. Doping classes

- A. Stimulants
- B. Narcotics
- C. Androgenic anabolic steroids
- D. Beta-blockers
- E. Diuretics
- F. Peptide hormones and analogues

II. Doping methods

- A. Blood doping
- B. Pharmacological, chemical and physical manipulation.

• **Stimulants**

Stimulants comprise various types of drugs which increase alertness, reduce fatigue and may increase competitiveness and hostility. Their use can also produce loss of judgement, which may lead to accidents to others in some sports. Amphetamine and related compounds have the most notorious reputation in producing problems in sport. Some deaths of sportsmen have resulted even when normal doses have been used under conditions of maximum physical activity. There is no medical justification for the use of 'amphetamines' in sport.

One group of stimulants is the sympathomimetic amines of which ephedrine is an example. In high doses, this type of compound produces mental stimulation and increased blood flow. Adverse effects include elevated blood pressure and headache, increased and irregular heart beat, anxiety and tremor. In lower doses, they e.g. ephedrine, pseudoephedrine, phenylpropanolamine, norpseudoephedrine, are often present in cold and hay fever preparations

which can be purchased in pharmacies and sometimes from other retail outlets without the need of a medical prescription.

- **Narcotics**

The drugs belonging to this class, which are represented by morphine and its chemical and pharmacological analogues, act fairly specifically as analgesics for the management of moderate to severe pain. This description however by no means implies that their clinical effect is limited to the relief of trivial disabilities. Most of these drugs have major side effects, including dose-related respiratory depression, and carry a high risk of physical and psychological dependence. There exists evidence indicating that narcotic analgesics have been and are abused in sports, and therefore the IOC Medical Commission has issued and maintained a ban on their use during the Olympic Games. The ban is also justified by international restrictions affecting the movement of these compounds and is in line with the regulations and recommendations of the World Health Organisation regarding narcotics.

- **Androgenic anabolic steroids**

The anabolic androgenic steroid (AAS) class includes testosterone and substances that are related in structure and activity to it. They have been misused by the sports world both to increase muscle strength and bulk, and to promote agreeaiveneas. The use of ASS is associated with adverse effects on the liver, akin, cardiovascular and endocrine systems. They can promote the growth of tumours and induce psychiatric syndromes. In males AAS decrease the size of the testes and diminish sperm production. Females experience masculinization, loss of breast tissue and diminished menstruation. The use of AAS by teenagers can stunt growth.

- **Beta-bolckers**

The IOC Medical Commission has reviewed the therapeutic indications for the use of beta-blocking drugs and noted that there is now a wide range of effective alternative preparations available in order to control hypertension, cardiac arrythmias, angina pectoris and migraine. Due to the continued misuse of beta-blockers in some sports where physical activity is of no or little importance, the IOC Medical Commission reserves the right to test those sports which it deems appropriate. These are unlikely to include endurance events which necessitate prolonged periods of high cardiac output and large stores of metabolise substrates in which beta-blockers would severely decrease performance capacity.

- **Diuretics**

Diuretics have important therapeutic indications for the elimination of fluids from the tissues in certain pathological conditions. However, strict medical control is required.

Diuretics are sometimes misused by competitors for two main reasons, namely: to

reduce weight quickly in sports where weight categories are involved and to reduce the concentration of drugs in urine by producing a more rapid excretion of urine to attempt to minimise detection of drug misuse, Rapid reduction of weight in sport cannot be justified medically. Health risks are involved in such misuse because of serious side-effects which might occur.

• **Peptide hormones and analogues**

Chorionic Gonadotropin (HCG – human chorionic gonadotropin): it is well known that the administration to males of Human Chorionic Gonadotropin (HCG) and other compounds with related activity leads to an increased rate of production of endogenous androgenic steroids and is considered equivalent to the exogenous administration of testosterone.

Corticotrophin (ACTH): corticotrophin has been misused to increase the blood levels of endogenous corticosteroids notably to obtain the euphoric effect of corticosteroids. The application of Corticotrophin is considered to be equivalent to the oral, intra-muscular or intravenous application of corticosteroids.

Growth hormone (HGH, somatotropin): the misuse of Growth Hormone in sport is deemed to be unethical and dangerous because of various adverse effects, for example, allergic reactions, diabetogenic effects, and acromegaly when applied in high doses.

Erythropoietin (EPO): is the glucoprotein hormone produced in human kidney which regulates, apparently by a feed-back mechanism, the rate of synthesis of erythrocyte.

BLOOD DOPING:

Blood transfusion is the intravenous administration of red blood cells or related blood products that contain red blood cells. Such products can be obtained from blood drawn from the same (autologous) or from a different (non-autologous) individual. The most common indications for red blood transfusion in conventional medical practice are acute blood loss and severe anaemia.

Blood doping is the administration of blood or related red blood products to an athlete other than for legitimate medical treatment. This procedure may be preceded by withdrawal of blood from the athlete who continues to train in this blood depleted state.

These procedures contravene the ethics of medicine and of sport. There are also risks involved in the transfusion of blood and related blood products. These include the development of allergic reactions (rash, fever etc.) and acute haemolytic reaction with kidney damage if incorrectly typed blood is used, as well as delayed transfusion reaction resulting in fever and jaundice, transmission of infectious diseases (viral hepatitis and AIDS), overload of the circulation and metabolic shock. Therefore the practice of blood doping in sport is banned by the IOC Medical Commission.

THE USE OF ERYTHROPOIETIN (EPO) IN BLOOD BOOSTING:

EPO is a peptide hormone that is produced naturally by the human body. EPO is released from the kidneys and acts on the bone marrow to stimulate red blood cell

production.

An increase in red blood cells improves the amount of oxygen that the blood can carry to the body's muscles. It may also increase the body's capacity to buffer lactic acid.

While proper use of EPO has an enormous therapeutic benefit in the treatment of anaemia related to kidney disease, its misuse can lead to serious health risks for athletes who use this substance simply to gain a competitive edge. It is well known that EPO, by thickening the blood, leads to an increased risk of several deadly diseases, such as heart disease, stroke, and cerebral or pulmonary embolism. The misuse of recombinant human EPO may also lead to autoimmune diseases with serious health consequences.

BLOOD DOPING CONTROL:

OVER THE COUNTER DRUGS (OTC):

OTC drugs are medications that are safe and effective for use by the general public without seeking treatment by a health professional. Popular examples include pain relievers like acetaminophen (Tylenol) and ibuprofen (Advil, Motrin), cough suppressants such as dextromethorphan (Robitussin) and antihistamines like loratadine (Claritin 24H).

Many over-the-counter (OTC) drugs used in the symptomatic relief of upper respiratory tract (URT) conditions are banned by sports governing bodies. If an athlete needs to take a medication that does not require a prescription (commonly referred to as "over-the-counter"), it is highly recommended that you consult your national NADO or that you show the Prohibited List to the pharmacist and ask for help before you decide on a product.

Psychiatric and neurologic medications — Antidepressants, anxiolytics, antipsychotics, and anticonvulsants can improve mood and decrease anxiety [2]. These medications are not prohibited by the World Anti-Doping Agency (WADA), although some have suggested that such drugs may give certain athletes an unfair advantage.

PRESCRIPTION ONLY MEDICINES (POMs):

A prescription medication is a licensed medicine that is regulated by law to necessitate a medical prescription before it can be obtained. The term is used to differentiate it from over-the-counter drugs which can be accessed without a prescription.

Although athletes are young and generally healthy, they use a variety of non-doping classified medicines to treat injuries, cure illnesses and obtain a

competitive edge. Athletes and sports medicine physicians try to optimize the treatment of symptoms related to extreme training during an elite athlete's active career. According to several studies, the use of antiasthmatic medication is more frequent among elite athletes than in the general population.

Recent studies show that athletes use also NSAIDs and oral antibacterials more commonly than age-matched controls, especially athletes competing in speed and

power sports. Inappropriately high doses and concomitant use of several different NSAIDs has been observed. All medicines have adverse effects that may have deleterious effects on elite athletes' performance. Thus, any unnecessary medication use should be minimized in elite athletes. Inhaled beta(2)-agonists may cause tachycardia and muscle tremor, which are especially harmful in events requiring accuracy and a steady hand.

Not only physicians and pharmacists, but also athletes and coaches should be better educated with respect to potential benefits and risks, and how each agent may affect an athlete's performance.

In sport, certain prescribed medications are prohibited in-competition because they may contain substances that meet two of the World Anti-Doping Agency's (WADA) criteria for prohibited substances and methods:

- Potential to enhance or enhances sports performance
- An actual or potential health risk to the athlete
- Use violates the spirit of sport (outlined in the Code).

Athletes, however, may at times need to use a prohibited medication to treat a legitimate medical condition. A Therapeutic Use Exemption is an exemption that allows an athlete to use, for therapeutic purposes only, an otherwise prohibited substance or method (of administering a substance) which may be present during competition.

CONTROLLED DRUGS (CDs):

A drug or other substance that is tightly controlled by the government because it may be abused or cause addiction. The control applies to the way the substance is made, used, handled, stored, and distributed. Controlled substances include opioids, stimulants, depressants, hallucinogens, and anabolic steroids. Controlled substances with known medical use, such as morphine, Valium, and Ritalin, are available only by prescription from a licensed medical professional. Other controlled substances, such as heroin and LSD, have no known medical use and are illegal.

EDUCATION:

The World Anti-Doping Agency offers many different tools to assist stakeholders with their education programs and help them educate target groups with suitable activities. There are tool kits of activities customized for Coaches, Teachers, Program Officers and Sport Physicians, and many different brochures providing anti-doping information. Also, WADA has created interactive computer games such as the Play True Quiz and Play True Youth Quiz, and other tools such as card games. Books and videos exploring numerous subjects related to the fight against doping in sport are also available.

WADA promotes a social awareness campaign that aims to familiarize audiences with clean sport messages. WADA's Outreach Program can be used to reach athletes during sports events of all kinds. The Outreach Model was created to provide stakeholders with tools to deliver their own awareness activities.

The Anti-Doping e-Learning platform (ADeL) offers access to all topics related to clean sport and anti-doping. It offers courses for athletes, coaches, doctors, administrators, parents and anyone interested in learning more about anti-doping

and protecting the values of clean sport. ADeL currently includes the following modules:

- ALPHA
- Coach True
- Sport Physician's Tool Kit Online
- Ado Kickstart
- Parents' Guide to Support Clean Sport

WADA is committed to improving evidence-based doping prevention strategies through social science research. Understanding the fundamental differences between athletes who choose to compete clean and those who resort to doping or why some athletes decided to dope – despite being well aware of the harmful effects of doping and of anti-doping rules – will assist in ensuring that doping prevention strategies are effective and efficient.

- Social Science Research Grant Program
- Social Science Funded Research Projects
- Target Research Program

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ASSIGNMENT--

I

BY
J.LINCY

SPORTS TECHNOLOGY

BY
J.LINCY

FALSE START DETECTION SYSTEM

- Start monitoring systems are used for ATHLETICS Event



Starting Blocks

- Starting blocks were developed in the late 1920's over the alternative of digging holes into ground.
- They were patented in 1935, and have officially been used at the start of sprint races since 1937.
- Several iterations of starting blocks have been filed by US

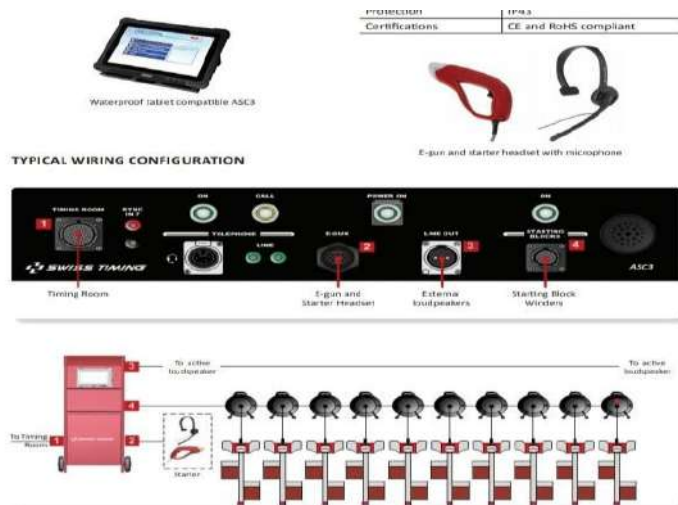


Valeri Borzov, circa 1972

ASC39 (AUTOMATIC START CONTROL)

- ❖ Is suitable for all levels of athletics , and is compatible with timing installation manufactured by swiss timing.
- ❖ It enables up to 10 lanes to be monitored simultaneously.
- ❖ The starting block sensor take in account the physiological response time.
- ❖ The time elapsed between the starting signal and the thrust of the athlete's foot against the starting block.
- ❖ The system memorizes and prints the reaction times occurring in the interval of 0.3 second before and 0.7 second after the starting gunshot.
- ❖ Each athlete's force curve is displayed on the computer screen and can be zoomed for deeper analysis.

TYPICAL WIRING CONFIGURATION



FALSE STARTING

- In the event of a false start , an acoustic signal is transmitted by the central station to the starter's headphones and to the starting block loudspeakers
- Online data transfer is made possible via RS422 serial line to a data handling unit and camera SCAN'O'VISION.
- The instructions given by the starter are amplified and easily understandable by the athletes in their individual loudspeakers.
- The volume of the voice calls and the volume of the false start warning sound can be adjusted individually.
- With its handle and wheels,ASC3 is easily movable between the different start positions.

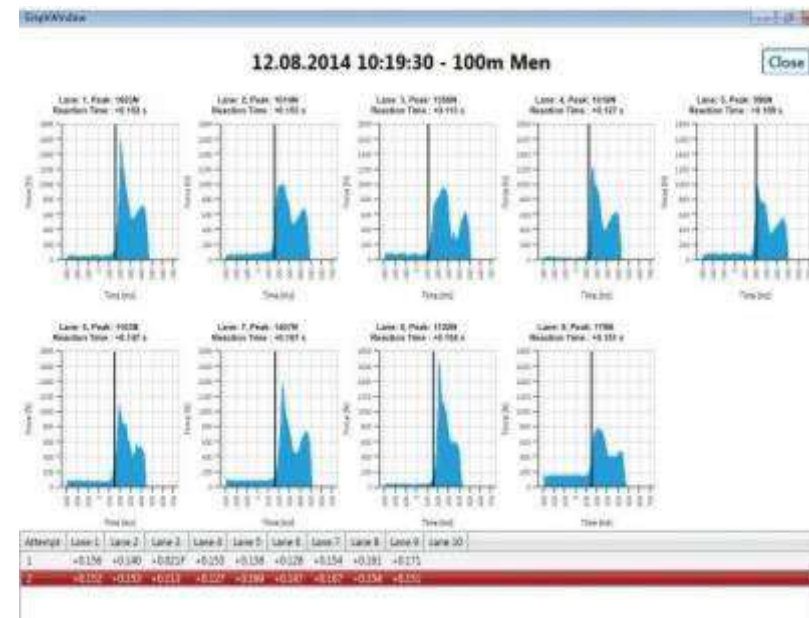
TOP FEATURES

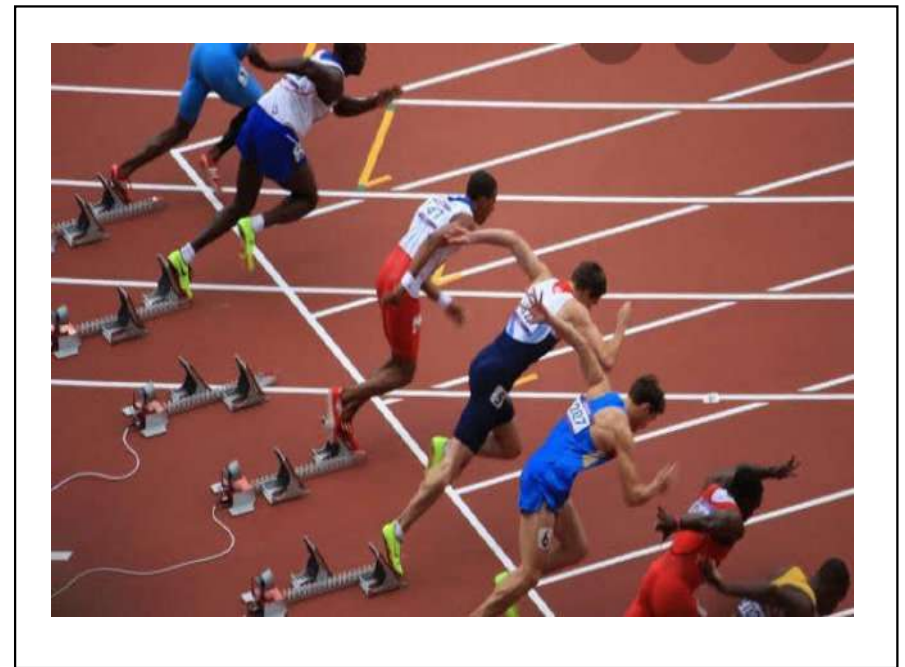
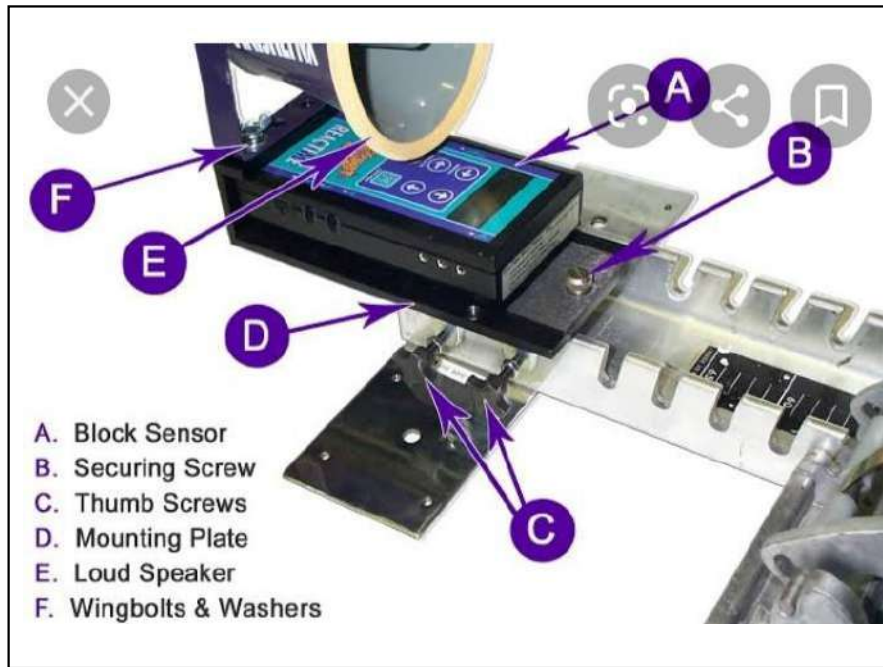
- Suitable for all competitions' level.
- Monitor up to 10 lanes simultaneous.
- Acoustic signal in case of false start.
- Force curve display for each lane.
- Electronic starting system-E-gun-included



RACK TIMER **ASC3** QUANTUM FEATURES

- ✓ Thanks to the new sensor technology, the athlete's starts can be analysed, and thus also serve as an ideal training tool.
- ✓ The athlete force (N) is measured before and after the gun shot (at 0 sec) in order to detect a false start.
- ✓ The black line shows the reaction time of the athlete.
- ✓ At the first attempt, the athlete in lane 3 performed a false start.
- ✓ The illustrated graphs represent the second attempt.





THANK YOU

ASSIGNMENT-II

SPORTS TECHNOLOGY

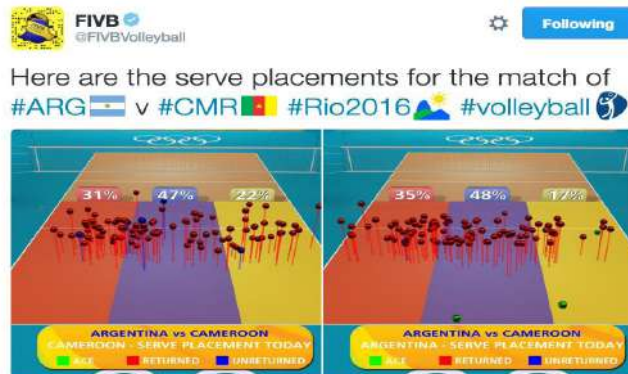


Assignment submitted to
Dr.K. Jothi Dayanandan

TECHNOLOGICAL ADVANCEMENTS IN VOLLEYBALL

- Officiating
- Training
- Game standards
- Player Quality
- Spectator Transparency

HAWK'S EYE



- Widely used
- Helps to determine the position of the ball.
- Used for both training and Officiating purpose.

ELECTRONIC TABLETS



Electronic tablets are provided to officials for reviewing the rally.

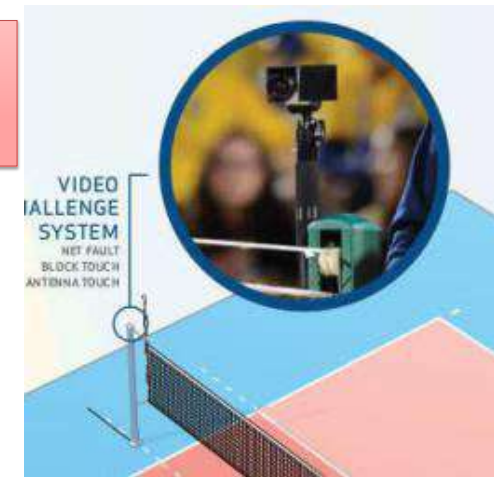
VIDEO CHALLENGE SYSTEM



Video challenge system an additional unit of HAWK'S EYE

VIDEO CHALLENGE SYSTEM

High definition cameras are arranged above the net for finding out the fouls over and under the net.



REFREE WEARING A MICROPHONE



Nowadays verbal communications are also given along with the whistle.

ELECTRONIC SCORESHEET



ELECTRONIC SCORESHEET

Manual score sheets are being used for flawless scoring

MIZUNO VOLLEYBALL SHOES



- Energy Core is the softest and bounciest midsole foam Mizuno has ever created.
- Mizuno claims it is 293% softer and provides 56% more energy return than any previously used material.
- Energy Core will be used inside the midsole of the shoe.

ASICS SHOES WITH GEL QUALITY



Asics is also another prominent shoes in volleyball which uses soft Elastomer gel to reduce the shock and increased stability.

THANKYOU

By ANOOP J KALLOOR
MPed. I

ASSIGNMENT-III

BASKETBALL SHOOTING MACHINES



SUBMITTED BY.
S.PRIYADHARSHINI
MPED1

- Basketball shooting machines can help you improve your shooting ability by increasing the number of shots you get up during the time you have to practice. These machines are placed under the hoop and as you shoot, they gather the ball and pass it back to you so you can keep shooting.
- In other words, a basketball shooting machine is basically a robot rebounder that can be set up to get you the ball quickly anywhere you want to practice your shots. This can help you become a better shooter and increase your on-court abilities.

Quick summary

- [iC3 Shot Trainer](#) The design of this machine helps you to improve the arc of your shot and then returns the ball back to you so you can keep shooting at a high volume.
- The [SKLZ Kickout](#) is a basic shooting and rebounding machine that attaches to the hoop and allows the ball to kick back out to you once you've made a shot. This design is simple but still effective.
- A more pro-level shooting machine is the [MYOM Basketball Rebounder Machine](#). This machine is expensive but is capable of rebounding your shot and passing it back to you quickly and can be adjusted to pass to different areas of the court.

1. [iC3 Shot Trainer](#)



ADVANTAGES

- Effective shooting machine that will help improve your shot.
- Easy to transport and pack to take with you to any court.
- High net design improves the arc of your shot.

DISADVANTAGES

- Ball can sometimes get stuck in the machine.
- Attachments to hold the machine in place can loosen over time.

2. SKLZ Kickout



This is a simple but still effective machine that works well without any moving parts. The SKLZ Kick out attaches to the hoop or net you are shooting on and a plastic slide like design allows the ball to roll or bounce back your way. The simple design means there aren't any parts to break or maintenance that needs to be done on this machine. It also easy to transport and one of the cheapest basketball shooting machines around.

ADVANTAGES

- Very affordable.
- Easy to set up and use quickly.
- No moving parts to break or wear out.

DISADVANTAGES

- Not adjustable so ball only returns in one direction.
- It does not collect and return missed shots.

3. MYOM Basketball Rebounder Machine



The MYOM Basketball Rebounder Machine is a pro-level machine that can catch and return shots quickly and accurately. This machine is set up under your basketball hoop a large net will catch any made or missed shots, funnel the ball do the return mechanism, and deliver a pass back into your hands so you can get another shot up. It's a big machine but is a lot of fun to use and will definitely improve the quality of your shot

ADVANTAGE

- Pro-level machine that can be adjusted to return the ball anywhere on the court.
- Can collect both made and missed shots.
- Fun and effective to use.

DISADVANTAGES

- Large so not easy to transport.
- It comes with a hefty price tag.



THANK YOU

American Statistician Review
MEASURES OF CENTRAL TENDENCY

MEASURES OF CENTRAL TENDENCY

	INDIVIDUAL SERIES	DISCRETE SERIES	CONTINUOUS SERIES
MEAN	$\bar{X} = \frac{\sum X}{N}$	$\bar{x} = \frac{\sum fx}{N}$	$\bar{x} = \frac{\sum f_m x}{N}$
MEDIAN	$M = \text{Sig} \left(\frac{N+1}{2} \right)^{\text{th}} \text{ item}$	$M = \text{Sig} \left(\frac{N+1}{2} \right)^{\text{th}} \text{ item}$	$M = \text{Sig} \left(\frac{N+1}{2} \right)^{\text{th}} \text{ item}$ $M = \frac{2f_{cf} - CF}{f} \times c$
MODE	Highest frequency	Highest frequency	$\text{Mode} = L + \left[\frac{f - f_1}{2f - f_1 - f_3} \right] \times c$

Crude mode = 3median - 2mean

MEASURES OF DISPERSION

RANGE:	COEFFICIENT OF RANGE
$R = H - L$ H = Range of highest value L = lowest value	$\text{Coeff. R} = \frac{H - L}{H + L}$

QUARTILE DEVIATION

INDIVIDUAL SERIES	DISCRETE SERIES	CONTINUOUS SERIES
Step 1: $Q_1 = \text{Sig} \left(\frac{N+1}{4} \right)^{\text{th}} \text{ item}$	Step 1: Calculate CF Step 2: Compute $(N+1)/4$	Step 1: locate $2.5 \times (N+1)$ in c.f. Step 2: Compute $(O_1) \times (O_2)$
Step 2: $Q_3 = \text{Sig} \left(\frac{3(N+1)}{4} \right)^{\text{th}} \text{ item}$	$Q_1 = \text{Sig} \left(\frac{N+1}{4} \right)^{\text{th}} \text{ item}$ $Q_3 = \text{Sig} \left(\frac{3(N+1)}{4} \right)^{\text{th}} \text{ item}$	$Q_1 = L + \left[\frac{2.5 - CF}{f} \right] \times c$ $Q_3 = L + \left[\frac{7.5 - CF}{f} \right] \times c$
Step 3: $QD = \frac{Q_3 - Q_1}{2}$	Step 3: $QD = \frac{Q_3 - Q_1}{2}$	Step 3: $QD = \frac{Q_3 - Q_1}{2}$

Under Q quartile range = $Q_3 - Q_1$ Coefficient of QD = $(Q_3 - Q_1) / (Q_3 + Q_1)$

Gampala Abhinava Reddy (10A) M.P.Ed 2 Year

MEAN DEVIATION

INDIVIDUAL SERIES	DISCRETE SERIES	CONTINUOUS SERIES
Step 1: Find mean $\bar{x} = \frac{\sum fx}{N}$	Step 1: Find mean $\bar{x} = \frac{\sum fx}{N}$	Step 1: Find mean $\bar{x} = \frac{\sum fx}{N}$
Step 2: Find $ x_i - \bar{x} $	Step 2: Find $ x_i - \bar{x} $	Step 2: Find $ x_i - \bar{x} $
Step 3: M.D. = $\frac{\sum f x_i - \bar{x} }{N}$	Step 3: M.D. = $\frac{\sum f x_i - \bar{x} }{N}$	Step 3: M.D. = $\frac{\sum f x_i - \bar{x} }{N}$

Coefficient of Mean Deviation = $\frac{\text{Mean Deviation}}{\text{Mean}}$

STANDARD DEVIATION

INDIVIDUAL SERIES	DISCRETE SERIES	CONTINUOUS SERIES
Step 1: Find mean $\bar{x} = \frac{\sum fx}{N}$	Step 1: Find mean $\bar{x} = \frac{\sum fx}{N}$	Step 1: Find mean $\bar{x} = \frac{\sum fx}{N}$
Step 2: Find $ x_i - \bar{x} $	Step 2: Find $ x_i - \bar{x} $	Step 2: Find $ x_i - \bar{x} $
Step 3: Find $ x_i - \bar{x} ^2$	Step 3: Find $ x_i - \bar{x} ^2$	Step 3: Find $ x_i - \bar{x} ^2$
Step 4: $\sigma = \sqrt{\frac{\sum f x_i - \bar{x} ^2}{N}}$	Step 4: $\sigma = \sqrt{\frac{\sum f x_i - \bar{x} ^2}{N}}$	Step 4: $\sigma = \sqrt{\frac{\sum f x_i - \bar{x} ^2}{N}}$

Coefficient of Standard deviation = $\frac{\text{Standard deviation}}{\text{Mean}}$

Z-Scale	Sigma Scale	Hull Scale
$z = \frac{x - \bar{x}}{\sigma}$	$\sigma = 16.66 z + 50$	Hull Scale = $1000z + 50$
$x = \bar{x} + z \cdot \sigma$	$x = \frac{z \cdot \sigma}{16.66} + 50$	$x = \frac{z \cdot \sigma}{1000} + 50$

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CORRELATION

[-1 ≤ r ≤ 1]

INTERPRETATION

1. If $r = 0$	No correlation
2. If $r = +1$	perfect Positive correlation
3. If $r = -1$	perfect Negative correlation
4. If $0 < r < 0.5$	low +ve correlation
5. If $-0.5 < r < 0$	low -ve correlation
6. If $0.5 < r < 1$	high +ve correlation
7. If $-1 < r < -0.5$	high -ve correlation
8. If $0.5 < r < 0.75$	Moderate +ve correlation
9. If $-0.75 < r < -0.5$	Moderate -ve correlation

PEARSON'S PRODUCT MOMENT CORRELATION COEFFICIENT

$r = \frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}}$

Step 1: find mean of variable (X) & variable (Y)
 Step 2: find $(x_i - \bar{x})$ of two variables
 Step 3: find $(y_i - \bar{y})$ and xy
 Step 4: substitute in the formula.

RANK CORRELATION

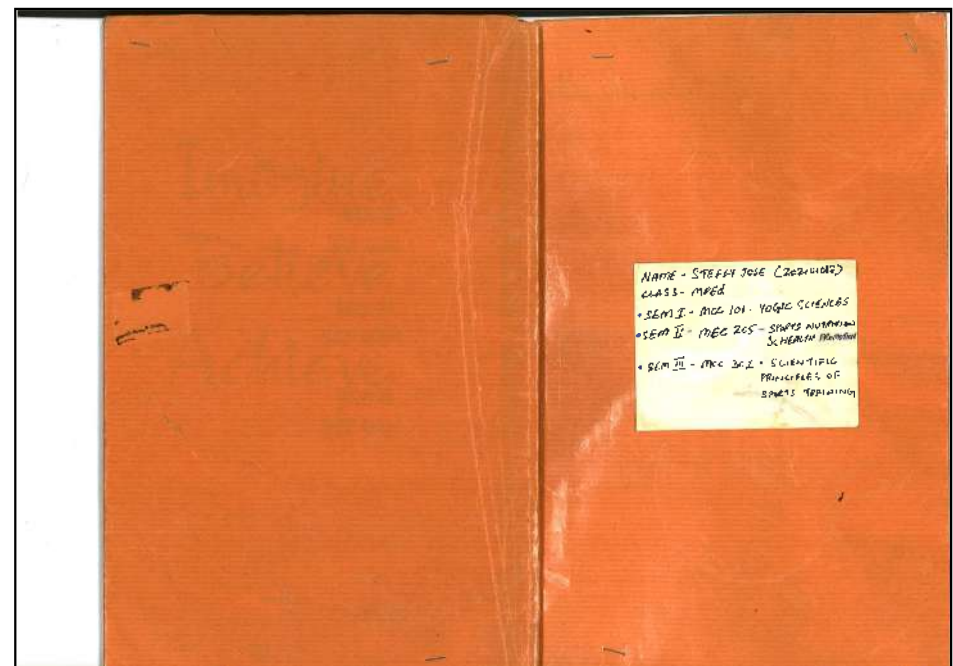
RANK NOT REPEATED	RANKS REPEATED
Step 1: find R and R ₂ by ranking Step 2: find $D = R_1 - R_2 $ Step 3: find $D^2 = R_1 - R_2 ^2$ Step 4: substitute in the formula	Step 1: find Ranks by ranking Step 2: find $\sum R_1^2$ and $\sum R_2^2$ Step 3: find $\sum R_1 R_2$ Step 4: substitute in the formula

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T-RATIO

INDEPENDENT T TEST	DEPENDENT T TEST
$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_p^2}{n_1} + \frac{s_p^2}{n_2}}}$ $s_p^2 = \frac{\sum (x_1 - \bar{x}_1)^2 + \sum (x_2 - \bar{x}_2)^2}{n_1 + n_2 - 2}$	$t = \frac{\bar{D} - \mu_D}{\frac{s_D}{\sqrt{n}}}$ $s_D^2 = \frac{\sum (D_i - \bar{D})^2}{n - 1}$
Step 1: find mean Step 2: find Standard deviation Step 3: find \bar{x}_1 and \bar{x}_2 Step 4: find s_p^2 and t_{crit} Step 5: Apply in formula.	Step 1: find mean Step 2: find Standard deviation Step 3: find \bar{D} and s_D Step 4: find \bar{D} and t_{crit} Step 5: substitute in formula.

CHI SQUARE

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$


YOGA COLLEGE OF
PHYSICAL EDUCATION,
CHENNAI.

TEN SQUARE INDEX

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YOGA COLLEGE OF PHYSICAL EDUCATION
TAKESHWARAN CHENNAI

MCC 101 - YOGIC SCIENCES

Unit 1 - Introduction

Meaning and Definition of Yoga

Rashtya Yoga: Jansu, Nipana, Panna, types of asana - Pranayama, Pratikaryama, Dhyana, Dhyanu. Soudhi

Concept of Yogic Practices

Principle of Breathing - Awareness - Relaxation

Sequence - Counting pose - Time - Place - Clothes - Bathing - Emptying the bowels - Shower - Diet - No Smoking - Age - Control - Intuition - Inhaled airway - Sunbathing - Suryanastha - Charaka - nat's

Unit 2 - KRIVAS

Shat Krivas - meaning, techniques and benefits of Neki - Dhad - Kapalabhati - Sarabala - Nauli - Basti, Bandhas; meanings, techniques and benefits of Jalendra bandha, Triva, Bandha, Uddiyanabandha, Mula bandha

Unit 3 - Mudras

Meaning, Techniques and benefits of hanta mudra, amaryukhabantana, Samyaktabanta, mana mudra, Kaya mudra, Bandha mudra, adharu mudra

meditation: meaning, Techniques and benefits of meditation - passive and active, Saguna meditation and Nirguna meditation.

Unit 4 - YOGA AND SPORTS

Yoga Supplemental Exercise - yoga compensation Exercise - yoga rejuvenation Exercise power yoga.

Role of yoga in psychological preparation of athlete: mental well being, Anxiety, Depression, concentration, self actualization.

Effects of Yoga on physiological System, circulatory, skeletal, digestive, Nervous, respiratory, Excretory System.

Unit 5 - YOGA FOR SKILL DEVELOPMENT

Yoga for skill development - yoga for performance enhancement of sports person - yoga for management of selected sports injuries - yoga for leadership -

UNIT 1
INTRODUCTION

YOGA THE SCIENCE ①

The yoga practitioners practicing yoga in caves in the Himalayas, that is, far away from common life.

But Yoga can be practiced by everyone.

Meaning - The word 'Yoga' is derived from the Sanskrit root 'Yuj', meaning 'to join' or 'to unite' or to unite. Yoga, refers to an inner science, consisting of a variety of methods through which human beings can realize their union and achieve mastery over their destiny.

Definition -- A spiritual and ascetic discipline, a part of which, including breath control, simple meditation, and the adoption of specific bodily postures, is widely practiced for health and relaxation.

*** Two Extreme Views -->**

- Yoga is highly difficult and complex
- Yoga is too simple.
- Yoga is to be studied in its true form.

Aim

- The aim of yoga is a state of equilibrium and peace.
- The aim of yoga is to manifest divinity within.
- The aim of yoga is to eradicate pain and misery.
- State of freedom is the aim of Yoga.
- Yoga aims at spiritual evolution of consciousness.
- Yoga aims at attaining divine light.
- Yoga aims at excellence in all fields of life.
- Yoga aims at nothing less than a complete transformation of man.
- The aim of yoga is to always observe things accurately and therefore never act in a way that will make us regret our actions later.
- The aim of yoga is to encourage us to be a little better than we were before.
- Yoga aims at total mastery over every aspect of the human personality in order to arrive at the ultimate truth.
- Yoga aims to discover to have innerness.
- Yoga aims at the integration and harmonisation

moral, emotional and spiritual ③

SCOPE

- Teaching (Schools, colleges, universities, special schools)
- Fitness and Health related opportunities (Community centres, Resorts, camps, spas, hospitals, old age home, etc.)
- Sports media opportunities (writing books, sport broadcasting, journals, magazines)
- Yoga and sport related opportunities (Research, sport consulting)
- In some cases, perhaps, knowledge of yoga will motivate further study in the field of endeavours.
- Yoga conquers the main obstacles to happiness, desire, anger, greed, infatuation, pride and envy.
- It makes great personal and even business sense. Yoga helps to avoid spiritual calamities too.
- Yoga practices opportunities to life learn, to teach and specialise in an area, which are abundant, such as yoga for physical fitness, yoga therapy, spiritual yoga, prenatal or postnatal yoga, yoga for stress, yoga for complex yoga for acute and chronic yoga - yoga is thus indispensable science.

ADVANTAGE

- Improves brain function
- Lower stress levels
- Alters gene expression
- Increases flexibility
- Lower blood pressure
- Improves lung capacity
- Reduces anxiety
- Reduces chronic back pain
- Improves insulin junction
- Lower stress levels
- Lowers blood sugar in diabetics
- Improves sense of balance

4 STAGES OF YOGA

- The 1st stage -> ARANBHAVASTHA is one in which we practice at one level of our physical body
- The 2nd stage -> GHATAVASTHA, when the subtle layer to move in relation with our body.
- The 3rd stage -> PARICHAYAVASTHA, when our intelligence and the body becomes one.
- The 4th stage -> USHATTYAVASTHA, the state of perfection.

ASTANGA YOGA

Is a style of yoga as exercise popularized by K Pattabhi Jois during the 20th century, often presented as a modern-day form of classical Indian yoga. The style is energetic, synchronizing breath with movements. The individual poses (asana) are linked by flowing movements (vinyasa).

Astanga (Eight Paths of Yoga) is Patanjali's classification of classical yoga, as set out in his Yoga Sutras.

- Yama (Restraint)
- Niyama (Observance)
- Asana (Physical posture)
- Pranayama (regulation of breath)
- Pratyahara (Sense withdrawal)
- Dharana (Focus/concentration)
- Dhyana (meditation)
- Samadhi (total absorption)

- YAMA (RESTRAINT)

- 5 types of Yamas ~
- 1. Ahimsa (non-violence)
 - 2. Satya (truthfulness)
 - 3. Asteya (non-stealing)

1. Ahimsa - means non-harming or non-violence in Sanskrit. Although yoga is founded on the principle that yoga should be safe, accessible, inclusive and engaging for all students - regardless of physical condition, level of experience, or reasons for being interested in yoga. It is the practice of self-regulation designed to free us from being victims of our own human impulses. This principle is the driving force behind the yogi's daily decisions and behaviors.

2. Satya - Truthfulness or the action that conveys the reality as it is. Speech and mind conforming to reality as seen, inferred or heard. Speech should not be deceptive, inflated, egotistical, barren of a meaning, or hurtful - avoid unpleasant truth or pleasant untruth. Give up luxury or indulgence in favor of pure objectivity. Take ego with the love via of inhibition. Everyone has their own perception of truth - when established in truth, spirit of action depend upon the action of the yoga (Sutra 2.36).

3. Asteya - means non-stealing. Taking something not belonging to oneself is stealing. To forsake any such desire in desires, greed (lobha) and desire (raga) cause stealing. Developing non-attachment helps resist temptation for objects of the senses. Making demands in a relationship is stealing. Through practice of Asteya, all treasures will be at your disposal (Sutra 2.37).

4. Brahmacharya - or celibacy, is controlling the sense organs and refraining from the eight forms of sexual indulgence. A brahmachari should have a frugal diet and moderate sleep. Avoid craving for sensual enjoyment. Sublimate and redirect sexual energy - to achieve inner strength. One established in celibacy attains "Vira" - indomitable courage, vigor (Sutra 2.38); and can effectively transmit true knowledge of self to disciples.

5. Aparigraha - or non-attachment, means no possessions, besides what is needed for basic sustenance. Time and energy spent in accumulation and guarding possessions. Constant fear of losing, causing mental anguish and pain. Aparigraha removes fear, hate, disappointment, attachment, anxiety and pain - when established in aparigraha, one obtains full knowledge of past and future lives (Sutra 2.39).

NIYAMA (OBSERVANCE)

- 5 types of Niyamas -
- 1. Saucha (cleanliness)
 - 2. Santosha (Contentment)
 - 3. Tapas (Austerity)
 - 4. Svadhyaya (self-reflection/self-study)
 - 5. Ishvara Pranidhana (Surrender to god)

1. Saucha (cleanliness) - External cleanliness through soap/water, etc and taking pure foods (includes fasting). Ratha. Yoga has six cleansing techniques - neti, kriya, dhauti, napa neti, trishana, nauli. Internal cleanliness through eating the wild-fresh sattvic (pure) by removing anger, pride, arrogance, jealousy, greed, delusion, etc (Sutra 1.33 - Jalandhara, etc is purify the mind). Cleanliness of environment (air, pollution); from saucha comes delight for one's own body and disinterest for contact with others (Sutra 2.40). From inner purity arises purity of Sattva, cheerfulness, one-phlegmated, control of senses, and fitness for vision of the self (Sutra 2.41).

2. Santosha (Contentment) - Being contented with what we have, not desiring more than what we need. Being contented in all situations, under all circumstances (not constantly complaining). We need to strive to 'be something' or 'achieve something' - we are perfect the way we are. One established in Santosha attains supreme happiness (2.42).

3. Tapas (Austerity) - Defined as scorching pairs of experiences like heat/burn, pain/pleasure, hunger/thirst, etc. Ability to sit and stand motionless. Ability to hold stance. Practice of asana, pranayama helps develop tapas. Tapas is needed to remove impurities caused by karma, afflictions (klesha) and propensities (vasanas). When established in tapas, mastery over body and senses is achieved (Sutra 2.43).

4. Svadhyaya (Self-study) - is a Sanskrit term, which means, the recitation of the Vedas and other sacred texts. It is a broader concept with several meanings. Reading anything that helps deepen one's own yoga practice and moves one closer toward their self can be a daily practice of Svadhyaya. The aim of this principle is to bring the experience of that immense consciousness, the self, to awareness. To practice Svadhyaya, one can meditate and study themselves, their activities and thoughts, practice yoga, study the wisdom teachings and spend solitary time in nature, thus widening our knowledge and understanding.

5. Ishvara Pranidhana (Surrender to God) - Ishvara is a Sanskrit word, that can be translated to mean, supreme, or personal, God. The practice of Ishvara Pranidhana therefore means, that if we are able to completely surrender our individual ego identities to God (our own higher self) we will attain the identity of God. It is a "big picture" yoga practice; it indicates a sacred shift of perspective that helps us to remember, along with, and receive the grace of being alive. Ishvara Pranidhana can be practiced by spending time by oneself, talking or writing to oneself; but gentle with oneself and practice gratitude directed.

ASANA (Physical posture)

An asana is a body posture, originally and still a general term for a sitting meditation pose and later extended to hatha yoga and modern yoga as exercise, to any type of position, adding reclining, standing, inverted, twisting and balancing poses.

Asanas are performed to improve flexibility, strength and balance. It helps the body's joints, ligaments, and muscles strengthen through movement. A regular yoga practice can, over time, increase flexibility and mobility, lubricating the spine and alignment to aid in everyday activity.

- Two kinds of Asanas
 - 1. Dhyana asana (Meditative)
 - 2. Svaasthi asana (Healthy/therapeutic asanas)
- Three types of Asanas:
 - 1. For the sake of Niyama
 - 2. For the sake of physical health (cultural and corrective)
 - 3. For the sake of relaxation
- Some classify asanas under three ways
 - 1. Standing poses - give vitality
 - Parsva Konasana (Side angle pose)
 - Trikonasana (Triangle pose)
 - Ardha Chandrasana (Half moon pose)

- Kipartha Virabhadrasana (Revered warrior pose)
- 2. Sitting poses - one calms
 - Padmasana (Lotus Pose)
 - Yoga Mudrasana
 - Ardha Matsyendrasana (Spinal twist)
 - Vajrasana (Diamond Pose)
 - Kalkasana (Cow Pose)
 - Kukkutasana (Fowl Pose)
 - Kumasana (Tootles Pose)
 - Akataha Chandrasana (Shantay Bow)
 - Parshvottasana (Forward Bend)
 - Purna Bhadrasana (Full Bow)
 - Tana Sthasana (Head to knee Pose)
 - Eka Pada Sthasana (leg over shoulder Pose)
- 3. Twist positions - one cleansing
 - Namaska Parsvakonasana (Prayer twist)
 - Parivrtta paha Mukha Shvanasana (Revered downward facing dog)
 - (Belly twist) Jathara Parivartanasana
 - Parivrtta Trikonasana (Revered Triangle)
 - Parivrtta Parsvakonasana (Revered Side angle)
 - Parivrtta Ardha Chandrasana (Revered Half moon)
 - Ardha Matsyendrasana (Half lotus of the posture, twisting)
 - Ardha Matsyendrasana (Other Side twist)

- ④ Prone Poses -- are energizing and restful (Lying on abdomen)
- Bhujangasana (Serpent posture)
 - Salabhasana (Locust posture)
 - Dhanurasana (Bow Posture)
 - Anantashana (One sided)
 - Makarasana (Crowdita posture)

- ⑤ Supine poses - give power and vigor (Lying on back)
- Naukasana (Boat Posture)
 - Pawanmuktasana
 - Saswangaasana (Standing on shoulder)
 - Matsyasana (Fish Posture)
 - Halasana (Plough Posture)
 - Chakrasana (Wheel posture)

- ⑥ Inverted poses - develop mental strength (Any pose in which, the head is higher from the ground than the feet)
- Downward-Facing Dog Adho Mukha Svanasana
 - Vipasitara Kandas (Legs up the wall)
 - Balasana (Child Pose)
 - Uttarasana (Plowhead Posture)

- ⑦ Balance poses - brings lightness
- Tadasana (Mountain Pose)
 - Vrikshasana (Chair Pose)
 - Vrikshasana (Tree Pose)
 - Gandakasana (Eagle Pose)
 - Urdhva Hastha Padangusthasana (Extended Hand-to-Bye-Toe Pose)

- ⑧ Archa Urdhvasana (Half Camel Pose)
- Urdhva Dhanurasana (Full Camel Pose)
 - Reclining Pigeon Pose

- ⑨ Backbend poses - are exhilarating
- Bhujangasana
 - Dhanurasana
 - Salabhasana
 - Matsyasana
 - Camel Pose
 - Chakrasana
 - Urdhva Mukha Shvanasana
 - Eka Pada Rajakapotasana

- ⑩ Jumping poses - are exhilarating
- Crow pose and cove pose peak pose
 - Baby crow yoga
 - Ashanga Advanced Scorer & Yoga Leg-aria
 - Adho Mukha Svanasana, post which the jump through the arms into Tulangulasana (Cabbage Pose) is followed to finally sit in Dandasana (Staff Pose).
 - Ashanga Yoga sequences
 - Core Yoga sequences

- ⑪ Forward bend poses - is refreshing
- Padmasana, Paganada
 - Shatanga Mudra
 - Vajrasana, Paganada
 - Janushastana
 - Parshvottasana (half forward bend)
 - Urdhva Dhanurasana (Inverted pose)
 - Pawanmuktasana (Legs release pose)
 - Saswangaasana
 - Hasthasana
 - Neekasana
 - Ahimsa, Bhujangasana
 - Ekpad Hastasana
 - Uggrasana
 - Vajra Ardha
 - Adho Mukha Svanasana

- ⑫ Relaxation poses - gives mental peace.
- Savasana
 - Padmasana
 - Supta Bhujangasana
 - Makarasana
 - Matsya Krantasana
 - Supta Bhadrasanasana
 - Sawangasana
 - Balasana
 - Somnaskasana

- # Advantages
- Softing Asana - opposite flexibility to the hips, knees, ankles and the muscles of the groin.
 - Keeps spine steady, provides stability of the body and pacify the mind
 - Naturally relaxing
 - Reflective and meditative asanas often comes more easily
 - Standing Asana -> Strengthens leg muscles and joints.
 - Increase the suppleness and strength of the spine and body
 - The arches of the legs are stretched, increasing the blood supply to the lower limbs, preventing varicose veins and thrombosis in the calf muscles
 - tones the cardio-vascular systems, as the heart rate with naturally increases, due to the exertion required to maintain standing pose.
 - The lateral wall of the heart is fully stretched, increasing the supply of blood to the heart.
 - Twists -> improves the suppleness of the middle body and releases spinal, hip and groin disorders.
 - The spine also becomes supple and this improves the flow of blood to the spinal nerves and increases energy levels
 - They also squeeze the Psoas, helping to detoxify the body

Inversions -> vital organs like the brain, heart and lungs are flushed with oxygenated blood.

Forward bends -> Squeeze and massage the abdominal organs, improving digestion, alleviating constipation and constipating weight gain.

- Has a unifying effect on the nervous system, as these organs relax, the frontal brain is cooled and the flow of blood to the entire brain is regulated.
- The sympathetic nervous system is cooled, bringing down the pulse rate and blood pressure.
- Stress is removed from the organ's perception and the carotid sinus.
- The adrenal glands are also cooled and function more efficiently.
- Since body is mostly in horizontal position, the heart is relieved of the strain of pumping blood against gravity, and the blood circulates through all parts of the body easily.
- These bends also increase elasticity in the lumbar spine (improving any sciatic problems), intervertebral joints and ligaments.
- The hamstring are stretched as is the entire back body.

Back bends -> Stimulates the central nervous system, assisting in the ability to bear stress.

- They help to relieve and prevent headaches and hypertension, and energize the body.
- Invaluable to people suffering depression, as it is released, as the chakra system opens to all back bends.

- Reclining Asana -> a restful poses which soothe the body and refresh the mind.
- They are also preparatory asanas, as may help relax the body and calm the mind.
 - They give the body the required energy and focus the mind for strenuous asana.
 - They prepare you for pranayama.
 - It lowers blood pressure and stabilizes the body after an exercise.
 - Helps to recover the breath and cool the body and the mind.
 - With so much increased energy in the body from other asana practice, one may be left feeling "fuzzy" if a mat pose is not performed at the completion of practice.

PRANAYAMA

Asana is modification in the body, pranayama is modification on the breath and subtle energy currents within us, and when we work with the mind directly with the ultimate aim of transcending body and mind and experiencing pure higher self.

Eight types of Pranayama -

① Nadi Suddha -

② Nadi Suddha -

Sitting in a cross legged position, using eyes hand, close right side of the nose and inhale deep through left, vice versa, 15 times

- It brings balance to the mind, body, soul.

- ③ Shitali Pranayama -
- Rolling the tongue in an O shape - inhale through mouth - hold the breath - practice 10 times (palmarthar bandh) - exhale through nostrils, 15 cycles.
 - Helps to cool the body
 - Reduces anxiety.

- ④ Ujjayi Pranayama -
- 5th cross-legged - breathing through mouth - try to mimic the sound of ocean waves by constricting the throat - close the mouth - breathing done through nose by constricting the throat, 15 times.
 - Gives relaxation
 - Helps in throat related issues
 - Alternative treatment for stress and PTSD, as it helps in reducing anxiety.

- ⑤ Kapalbhati Pranayama -
- Forceful exhaling and inhaling from lungs involuntarily.
 - Warms up
 - Strengthens the diaphragm and abdominal muscles.
 - Helps in increasing focus, reducing anxiety, and bone calcifies.

- ⑥ Bhastrika Pranayama -
- 5th cross legged - spine straight - close eyes - inhale and exhale at a fast rate.
 - Increases blood circulation in the body and

- ⑦ Bhramari Pranayama -
- Close the ears with thumbs and eyes with the finger - mimic the sound of a bee while inhaling and exhaling slowly, 5-10 minutes.
 - Helps in increasing concentration, alertness, memory improvement and reducing stress.

- ⑧ Anuloma & Viloma Pranayama -
- Inhale for 2-3 seconds - pause - exhale - inhale - pause - inhale with lungs are full - exhale - slowly.
 - Helps in relaxing, reducing stress and cleansing of nasal passages.

- ⑨ Sheetali Pranayama -
- Inhale air, while keeping the tongue behind the teeth - do the Jalandhar bandh - hold the breath - exhale air through nostrils.
 - It helps to cool body
 - It plays an important role in keeping the body temperature under control.

PRATHYAHARA

is a Sanskrit word meaning "withdrawal of the senses" from the body and from the environment.

The practice facilitates the journey into the inner world where there are no loud noises, advertisements to buy, lists to do, and other things that might distract us from our intellectual being.

It calms the mind, slows the mental stimulation and reverses the disturbed flow of prana. Also, used as a tool to rest and dealing with the control over the senses.

DHARANA

Means, "collection or concentration of the mind" or "the art of holding, beating, retaining, supporting, maintaining, retaining, keeping back, a good memory", or "firmness, steadfastness, continuity".

DHYANA

The yoga of meditation. It trains you to keep your mind off the unnecessary things and concentrate on what you need to do. Enables one to find the truth.

SAMADHI

is the experience of spiritual enlightenment when the self, the mind, and the object of meditation merge together into one.

The practice of equality - doing things that feed & nurture each aspect of your being.

CONCEPT OF YOGIC PRACTISE

Yoga is essentially a spiritual discipline, based on an extremely subtle science, which focuses on bridging the gap between mind and body. It is an art and science of healthy living. The word 'yoga' is derived from the Sanskrit root 'yuj', meaning 'to join' or 'to yoke' or 'to unite'.

Yogic practices in a wide range of practices with differing purposes, accompanying with various forms yoga philosophy derived from the vedas, physical postures derived from Hatha Yoga. Yoga enables one to lead a good health and life. practice mental hygiene, possess emotional stability, pragmatic moral values and attain higher level of consciousness, hence yogic practice and its concept are very important to understand and lead.

PRINCIPLES OF:

• Breathing -> Always breathe through the nose unless specific instructions are given to use contrary. co-ordinate the breath with the asana practice.

• No Straining -> Yoga must be done with free mind, without any strain or stress, only when will it be effective and concentration will be better.

• Age -> Yoga practice may be done by people of all age, groups, male and female.

CONTRA INDICATIONS -

A contraindication is a specific situation in which a particular pose or breathing exercise is not advised, because it could jeopardize one's health. Such instances include low back pain, shoulder injury and pregnancy. Injury prevention lies within the hands of both students and teachers.

• Pregnancy -> No supine asana
• Adhivaha core - strengthening, inversion, asana, intensive backbend, poses that compress the abdomen or cause excessive twisting

• Seated -> No forward bend
• No extreme backbend
• Knee Pain -> No Asana which exert unwanted pressure on the knee or push the knee beyond its range of motion.

• Head & Neck -> Recommended ventilative and less pressure from yoga
• No core strengthening of abdominal compression or excessive twists.

• Hypertension -> Avoid inversion poses
• No additional pressure, such as downward dog, Sarvangasana, handstand or Setu Bandha Sarvangasana.

• Forward shoulder or injury -> Avoid asana which stretch the shoulder area or put weight on the joint.
Focus on strength building instead of stability.

• Lower back pain -> Avoid advanced forward and backward bending positions.
• Move the pelvis to lower back, results in poor posture, weak back muscles and spinal instability.

• Injury -> If anyone is undergoing surgery or not fit or unwell, should avoid yoga for at least three weeks.
• Before beginning or resuming practice, it is advisable to consult the doctor.

• Hip, wrist and ankle injury or Pain -> Hip, wrist and ankle is important to such conditions.
• In case of some pain in any body part, avoid asana that can add strain, stretch or flex that joint.

INVERTED ASANAS

In the order of gravity on the body. It encourages the blood flow to brain.

Benefits:

- Reduces Stress
- Amely back deactivation
- Increases self confidence
- Increases mental power and concentration
- Massaging of the abdominal organs

Types:

- Chakrasana
- Sirsasana
- Viparita Karani

• Awareness -> here may be understood as knowing what happens in the body, the physical movement, the posture itself, breath control and synchronization, movement of prana, concentration on an area of the body or chakra, and, most importantly, witnessing any thoughts or feelings that may arise.

• Relaxation -> Savasana may be performed at any point during asana practice, especially when feeling physically or mentally tired. It should also be practiced on completion of the asana program.

• Sequence -> After completing, Shaktiana, asana should be done, followed by pranayama, then Pratyahara and Savasana which lead to meditation.

• Counter Pose -> when practicing the middle and advanced group of asanas, particularly, it is important that the program is structured so that beneficial bends are followed by forward bends and vice versa, and that, whatever is practiced on one side of the body is repeated on the other side. This concept of counter pose is necessary to bring the body back to a balanced state.

• Time -> The best time to practice is early in the morning or late in the evening; in the morning asanas do not come easily as the body is stiff. In the evening, the body moves more freely than in the morning, and the asanas come better with greater ease.

• Place -> They should be done in a clearly airy place, free from noise and noise. Do not do them on the barren floor or on an uneven piece, but on a mat, folded blanket or on a leveled floor.

• Clothes -> During practice, it is better to wear loose, light and comfortable clothes. Things with metals or anything that can be harmful, like watches, jewelry, etc. should be removed before practice.

• Bathing -> Asanas come easier after taking a bath, once done; a bath should be taken again as the body feels sticky due to perspiration. Taking a bath or shower before and after starting the asana, refreshes the body and mind, and the sequence is also done with great ease.

• Emptying the bowels -> It is important that there is no excess of food or undigested material in the body before starting the asanas or pranayama. Usually, it is better to keep good hours gap between the last meal and yoga, so that there is enough time for digestion, and the body will naturally purge. This is best so that the sessions are more effective, enjoyable and concentration is much better in an empty stomach.

• Stomach -> should feel light and free, so that the yoga can help one expel gas and get comfort.

• Diet -> Usually eat the diet or the diet based on fruits that contain one of the three yogic qualities known as Sattva. Foods that are pure, light, sweet are to be consumed.

SUNBATHING

• The Socratic process that keeps the body healthy.

• The best time to take sunbath is before 8:00am and after 5:00pm, as the heat of the sun at that time is tolerable and does not harm the body.

• Start with 5-10min for a while and gradually increase it to 15-20min max.

• Not to be done after meals

• Give Vitamin D

Benefits:

- Skin texture
- Helps in weight loss
- Increases happiness
- Keeps hair healthy
- Boosts immune system
- unclog blood vessels
- helps babies grow tall
- Balances hormonal system.
- Treats skin condition

Vitamin D and its importance:

- Essential to keep one healthy and fit.
- 90% of vitamin D is received from the sun.
- Inadequate vitamin D can cause serious damage to the bone and result in weak bones
- Vitamin D helps our immune system to

SURYANAMASKAR

is the most useful and popular mode of yoga exercise, which brings together the benefits of Asanas, pranayama and mudras, asteya. It consists of a series of 12 postures, which are performed early in the morning, facing the rising sun. Suryanamaskar energizes the entire nervous, glandular & neuro-muscular system of the body and this regular practice, ensures a balanced supply of oxygenated blood and perfect harmony to all the systems of the body, thus purifying the entire psychosomatic system of human constitution.

Steps in Surya Namaskar -

Postion 1

PRANAMASANA (Prayer Pose)
Procedure -> Standing position, facing the sun.
• Both feet should touch each other, palms joined together, in prayer pose.
Breath -> Exhale

Postion 2

HASTA UTTHANASANA (Raised Arm Pose)
Procedure -> with deep inhalation, raise both arms above the head and tilt slightly backward, arching the back.
Breath -> Inhale

Position 3
HASTAPADASANA (Hand to Feet Pose)

Procedure → With deep exhalation, bend forward and touch the mat, both palms to the mat with the feet, forehead touching the knees.

Breath → Exhale

Position 4
ASHWA SANCHALANASANA (Equestrian Pose)

Procedure → With deep inhalation, take the right leg away from the body to a big backward step.

- Both the hands should be firmly planted on the mat, the left foot between the hands, head tilted forwards the ceiling.

Breath → Inhale

Position 5
PARVATASANA (Mountain Pose)

Procedure → With a deep exhalation, tuck the hips and back up towards the ceiling, forming an upward arch.

- The arms should be straight and aligned with the head.

Breath → Exhale

Position 6
ASHTANGA NAMASKARA (Cobra Pose with eight parts of the body)

Procedure → With deep exhalation, lower the body down on the forehead, chest, knees, hand and feet are touching the mat, the butt lifted up.

- take normal breath in this pose

Breath → Retain breath/hold

Position 7
BHUVANJASANA (Cobra Pose)

Procedure → With deep inhalation, slowly snake forward, lift the head as up as the back arches concave, as much as possible.

Breath → Inhale

Position 8
PARVATASANA (Mountain Pose)

Procedure → Exhale deeply, again push the buttocks and hips up, toward the ceiling, as in position 6, arms straight with the head.

Breath → Exhale

Position 9
ASHWA SANCHALANASANA (Equestrian Pose)

Procedure → Inhale deeply, bring the right foot to towards the body, in a big forward step. Both the hands should be planted firmly on the mat, right foot between the hands, head tilted towards the ceiling.

Breath → Inhale

Position 10
HASTAPADASANA (Hand to feet pose)

Procedure → Exhale deeply, tie up and touch the mat, keeping both the palms to the mat with the feet, forehead touching the knees.

Breath → Exhale

Position 11
HASTA UTTANASANA (Raised Arm Pose)

Procedure → Inhale deeply, raise both the arms above the head and slightly backward.

Breath → Inhale

Position 12
PRANAMASANA (Prayer Pose)

Procedure → Return to stand facing the mat, both feet touching, palms joined

STEPS OF SURYA NAMASKAR

- 1 PRANAMASANA
- 2 HASTA UTTANASANA
- 3 HASTA PADASANA
- 4 ASHA SANCHALANASANA
- 5 PARVATASANA
- 6 BHUVANJASANA
- 7 PARVATASANA
- 8 ASHTANGA NAMASKARA
- 9 ASHA SANCHALANASANA
- 10 HASTA PADASANA
- 11 HASTA UTTANASANA
- 12 PRANAMASANA

CHAKRAS

- Literally mean "spinning wheel"
- chakras are various focal points, used in variety of ancient meditation practices, intuitively.
- the system refers to the energy centers we have in our bodies. There are seven major chakras, each in a specific location along the spine.

7 (SEVEN) CHAKRAS OF THE BODY

- 1 Muladhara (Root Chakra)
- 2 Svadhisthana (Sacral or pelvic chakra)
- 3 Manipuraha (Navel Chakra)
- 4 Anahata (Heart chakra)
- 5 Vishuddha (Throat chakra)
- 6 Ajna (Third eye chakra)
- 7 Sahasrara (Crown chakra)

1 Muladhara Chakra (Root Chakra)

- Location → Pelvic floor
- Element → Earth
- Color → Red
- Sound → Lam
- Pose → Vajrasana (Tortoise Pose)

The root chakra is located at the base of your spine. It provides you with a base or foundation for life, and it helps you feel grounded and able to withstand challenges.

2 Svadhisthana Chakra (Sacral Chakra)

- Location → In our sacrum
- Element → Water
- Color → Orange
- Sound → Yam
- Pose → Deivanaya (Coddler Pose)

The sacral chakra, or svadhisthana, is located just below your belly button. This chakra is responsible for your sexual and creative energy. It's also linked to how you relate to your emotions as well as the emotion of desire.

3 Manipuraha Chakra (Navel Chakra)

- Location → just above the navel
- Element → Fire
- Color → Yellow
- Sound → Ram
- Pose → Nauyasana (Boat Pose)

This chakra is located in the stomach area. It's responsible for confidence and self-esteem, as well as helping you feel in control of your life.

4 Anahata Chakra (Heart Chakra)

- Location → center of the chest
- Element → Air
- Color → Green

The heart chakra is located near your heart, in the center of your chest. It makes us more susceptible to love and deep compassion.

5 Vishuddha Chakra (Throat Chakra)

- Location → Throat, the endocrine glands
- Element → Space
- Color → Blue
- Sound → Ham
- Pose → Sarvangasana (Shoulderstand)

This chakra has to do with our ability to communicate.

6 Ajna Chakra (Third eye chakra)

- Location → Eyebrow level, mid-brain
- Element → Light
- Color → Indigo
- Sound → Om
- Pose → Sukhasana (Easy Pose)

This chakra is located between the eyes. This chakra gives us the ability of strong intuition. The third eye is responsible for intuition and is also linked to imagination.

7 Sahasrara Chakra (Crown Chakra)

- Location → Crown of the head
- Element → Thought
- Color → Violet
- Sound → Om
- Pose → Savasana (Corpse Pose)

Located at the top of the head. This chakra represents the spiritual connection to yourself, others and the universe.

Benefits of chakra:

- Physical health and well-being
- Beneficial for spiritual fitness
- Removes bad energy stored in the body
- Enables love to flow in one's life
- Allows you to know your inner self
- Transforms your weakness into your strength
- Grants access to your spiritual wisdom
- Impulses due to low streams into reality
- Good intuition
- Allows one to express and release emotions in a healthy manner.

NADIS

- Nadi is a Sanskrit word, which means 'tube', 'channel' or 'flow'
- It is used to describe the network of channels which allow energy to travel through the body
- From the life energy which is originated to help all living things function.

There are 3 main Nadis within the human body:

- 1 Ida Nadi → It is also known as left channel. This starts in the root chakra (muladhara).
- It flows to the left. In end out of the other chakras, up the spine & ends up at the left nostril.
- It represents mental energy.

- ② **Phalga Nadi** — o It is also known as Right channel, this starts in the same place - the root chakra
- o It flows to the right, up the spine and ending at the right nostril
 - o It is the origin of prana - the precursor of life force

- ③ **Sushumna Nadi** — o It is called as central channel, this runs straight up the spine, through all the chakras
- o Starting just below the root chakra, it leads up to the crown chakra - the Sahasrara
 - o It is the end of spiritual

Benefits of Nadis:

- o Increase flow of oxygen to the cells, opening & releasing physical and emotional stress
- o Deeply relaxes the muscles, reducing overall pain, neck rigidity and headaches
- o Stimulates the immune system from the base down to the tips in the muscles & cells
- o Total relaxation, producing a state of calm, peace and reducing nervous tension
- o Improves circulation to the scalp, stimulating the skin & helping hair growth

LIMIT - 2

SHAT KRİYAS

- * **Shat (Six), Kriyas (Action)** - consists of six group of purification practices
- * These Kriyas are practiced before asanas, pranayamas and other yogic practices, in order to purify the body of the devotee

Types of Kriyas -

1. Neti
2. Dhauti
3. Nauli
4. Basti
5. Kapalabhati
6. Trataka

Neti - A process of cleansing and purifying the nasal passage.

- Types -
- o) Jala Neti - warm water
 - o) Sutra Neti - miter tube
 - o) Dugdha Neti - warm milk
 - o) Ghrita Neti - warm clarified butter in ghee
 - o) Anant Neti - withdrawal of one's own urine

- o) **Jala Neti** - A Jalneti pot full of sterile salt lukewarm water
 - * Stand with the legs apart, slightly back forward
 - * Insert the nozzle of the salt pot into the right

- keep the nostril open and breathe freely through the nose
- Tilt the head slightly backward, then forward and side wards to the left, so that the water from the pot enters the right nostril and comes out through the left by gravity. Allow the flow till the pot is empty

To clean the nasal passage of the incoming water, blow out the water by active exhalation through alternate nostril as in Kapalabhati

o) **Sutra Neti** - an ancient Indian practice of passing a thread or similar material like a rubber catheter through the nose and out of the mouth

o) **Dugdha Neti** - is a yogic, cleansing practice used to clear the nasal passages with a special salt pot filled with milk, pre-warmed to body temperature

o) **Ghrita Neti** - is a yogic practice similar to Jala neti

o) **Anant Neti** - is a traditional technique used by some ancient yogis of using one's own urine (either by drinking it or managing to take it in body) for therapeutic or spiritual purposes

Benefits -

- It helps to remove mucus of pollen, from the nasal passages and sinuses, allowing air to flow without obstruction

- helps to maintain good health of ears, eyes and throat
- Has a calming and cooling effect on brain
- Reduces cold and flu symptoms
- Reduces tension
- Improves sense of smell and taste

DHAUTI - is the cleansing of the entire digestive tract.

procedure - o Sit in Padmasana and breathe deeply.

- Exhale, emptying the lungs as much as possible
- Lean forward slightly, straightening the elbows
- Push down on the knees with the hands and perform Jalandhara Bandha
- Contract and expand the abdominal muscles rapidly for as long as it is possible to hold the breath outside comfortably. So not strain. Release Jalandhara Bandha
- When the head is upright, take a slow, deep breath in. This is one round
- After, with the breathing normal, repeat commencing the next round

benefits - o It stimulates the appetite and improves digestion

- It massages the abdomen, strengthens the abdominal muscles and encourages optimum health of abdominal organs
- It alleviates depression, dullness and lethargy

NAULI - A process of giving an abdominal massage

procedure - o Firstly, empty the bowel and keep the stomach free

- In standing, lean forward with hands on the floor
- Exhale and hold the breath out
- Repeat this for 8-10 minutes and relax

benefits - o Improvement of venous outflow

- Stimulation of a large intestine
- Strengthening of respiratory muscles
- Stimulation of peripheral blood circulation
- Lowering of arterial pressure
- Stimulation of endocrine system

BASTI - A complete process of cleansing the intestines

procedure - o water tub, subject squats in the tub, water must come up to the navel

- lean forward, resting the hands on the knees
- Mula Bandha is repeated

benefits - o Replenishes the bowels

- Cures digestive disorders
- Balances the diet
- Enhances skin tone
- Stimulates solar plexus
- Acts as a powerful practice

KAPALBHATI - It is the cleansing process of skull and frontal part of the head

procedure - o Sit in a comfortable pose with eyes closed

- Inhale normally followed by exhalation forcefully
- Repeat this for upto 6-10 cycles

benefits - o Cures digestive system

- Awareness of "heralds"
- Improvement of concentration
- Reduces blood sugar level
- Benefits for health, brain/mind, skin and hair
- It helps in weight loss and is good for heart

TRATRAKA - It is the cleansing process of the eyes

procedure - o Sit in a comfortable pose with any posture

- Place a candle in front of a window, place hand at own length away from subject
- open the eyes, look at the flame without blinking
- concentrate on the flame without creating any tension
- Repeat the practice, 3 times

benefits - o Purifies the eyes

- Strengthens the eye muscles & improves vision of memory
- Helps in sleeping difficulty
- Strengthens the ability to concentrate, recommended for school children

BANDHAS

- * or to hold, tighten or lock, specific locks and holds of the semi-voluntary and involuntary muscles in the body
- * Bandha practice, aims to lock the prana at particular areas and redirect their flow into Sushumna and

Types of Bandhas -

1. Jalandhara Bandha
2. Uddhiyana Bandha
3. Moola Bandha
4. Maha Bandha

Jalandhara Bandha (throat lock)

o into stream/flow

This lock controls the network of Nadis in the neck

Technique - o Sit in a folded blanket in Siddhasana or any other comfortable posture

- Place the palms on the knees, keep the neck and the spine straight. Close the eyes and relax the whole body
- Inhale slowly and deeply with stretch, the neck forward and press the chin firmly against the throat
- Strengthen the arms by pressing the knees down with the palms
- Then bring the chin up and exhale

- benefits - o Stimulates the throat, balances thyroid function and regulates the body metabolism
- Stimulates the parathyroid for calcium management

Uddhiyana Bandha (abdominal contraction)

- "to rise up" or "sofly" upward
- Uddhiyana bandha must always be practiced on an empty stomach and the bowels should also be empty, evacuated completely

Technique - o Sit erect in any meditative pose

- Inhale deeply through the nostrils
- Place your hands on the knee thighs, just above the knee cap
- Take a couple of deep breaths to let proper flow of prana throughout the body
- Exhale the breathe completely, and lock it
- Now, draw the navel part 3 inch try to touch your spine, then lift it towards the 10 inch or hand's center, holding the breath
- Hold it for a few seconds, according to your comfort, then drop it gently

benefits - o The three organs and glands are massaged and toned

- It provides more blood and prana circulation in the unused area
- It removes lethargy and carbon dioxide and toxins
- It cures dyspepsia and is recommended for diabetics
- It acts in opening a clogged up inner ear as well as

Moola Bandha (Root lock)

Lock * firmly fixed, cause.
Moola Bandha is effective in releasing bindu gathi and for locking and unhooking mooladhara chakra.

Technique -- Sthi and in Siddha / Siddha vai
ana. Pasa and 6/1 on the back, against perineum -
the area in between the genitals and anus.

- Take deep lung breathes and relax the body and mind
- Practice moola and udhathi / vajras' mudra for sometime
- Exhale slowly lockout the anus muscle behind, just a bit forward
- Withdraw the perineum, lift up, contract and hold it for some time and then relax with breathing. Do 5 in 10 times
- Observe the breaking in the mooladhara - above the perineum area.

- After mastering the practice of contraction over mooladhara chakra - Bindu gathi, now the same practice is done with breathing in relaxation posture - Kumbhakar.
- It also for the mooladhara and the breath
- Now apply the moola bandha, contracting the genital area and perineum with drawing and lifting up and holding with continued relaxation - uddiyana kumbhaka, as long as possible.
- Then, release the hold and let loose the contraction. Exhale - do for 5-10 times. Observe the breaking in the mooladhara.

benefits - It widens many physical, mental and spiritual benefits.

- It releases masturbation and breaks phlegm
- It is beneficial for anal fissures, ulcers, prostatic, pelvic infections.
- It relieves depression, suppression and sea girth and prostration
- The swades in the female and the prostate gland in the male receive an increased blood circulation.
- There is some possibility that Moola Bandha is good in discharging or passing soft kidney and bladder stones.
- It affects the central and sympathetic nervous system, reducing tension, therefore offering subjective information of the uro-genital region.

Jihva Bandha

Good

- Release the position when state is required.
- They are to be performed only in the morning or late at night.

Types of Mudras -

- Hasta Mudra (Hand Mudras)
- Ananyukta hastan Mudra (Single-hand mudra)
- Sanyukta hastan Mudra (both hands)
- Mano Mudra (Mental Mudras)
- Kaya Mudra (Postural Mudras)
- Banda Mudra (Lock Mudras)
- Asthana Mudra (Spiritual Mudras)

HASTA MUDRA (Hand Mudras) -

They engage the motor cortex at a very subtle level. They generate a loop of energy which moves from the brain down to the hand and then back again. They redirect the prana emitted by the hands back into the body. Eg - Y Chita mudra, Trana mudra

Techniques -

- Joining the tips of two fingers or pressing by thumb, squirts and balance opposite elements in the body
- Initially, mudras should be performed for at least 10 minutes and then can be extended to 30 minutes to 1 hour.

Examples - Kyan Mudra (Mudra of knowledge) ->

Join tips of index fingers and thumb and keep three fingers straight. Keep your hand at your flexed knee, remember to keep palm facing up. Put a little pressure on joined tips and rest of the hand would be in relaxed position.

* Bhojini Mudra (Mudra of Earth) ->

Join the tips of the thumb and the tip of the thumb

* Vanasa Mudra (Mudra of Water) ->

Tip of little finger touches the tip of thumb with the other three fingers stretched out.

* Vajra Mudra (Mudra of Air) ->

Keep the index finger on the base of the thumb and press with the thumb keeping the other three fingers straight.

* Shunya Mudra (Mudra of Emptiness) ->

Keep the middle finger at the point of Venus and press with the thumb.

benefits - Mudras help to link the brain to the body, soothe pain, stimulate autophagy, change the mood and increase or reduce.

- Helps to increase concentration, memory, reduces sleep disorders
- Helps to release stress and anger, eases depression
- It increases determination and breaks individualism towards spirituality
- It supports cerebral power to the eyes
- Boosts metabolism and immune system
- It eliminates skin diseases, increase blood flow and reduces muscle aches.
- Helps to decrease the asthma's, neck pain, trembling in Parkinson's disease
- Helps eliminate excess gas/air related problem like gas, constipation.

* Hastas are primarily classified as

- 28 ananyukta hastas (one-hand gesture)
- 24 Sanyukta hastas (two-hand gesture)

Each of the hastas can be used to denote various thoughts, ideas and objects.

* Mava (hand mudras) -

Hand mudras form an integral part and provide a beautiful eye. They help for meditation. They induce

UNIT 3 - MUDRAS

- Mudras, in Sanskrit means "seal"
- It is a gesture, usually done with the hands, which focuses and directs energy in a yoga pose or meditation.
- They are yoga movements involving only the arms and hands. They are called the "yoga of the hands".
- Mudras influence five elements in the human body. The 5 fingers of the hand represent the 5 elements.

- The thumb - earth (Prithvi)
- fore finger - water (Abha)
- middle finger - air (Vayu)
- ring finger - fire (Agni)
- little finger - ether (Akasha)

- Mudras harness the 5 elements to avoid diseases
- benefits -
- They are universal and suitable for everyone
- Mudras can be practiced in all ways, walking, sitting, standing and even lying down.
- Mudras can be done even by patients. It is a simple way of preserving one's health.
- They provide instant relief to many illnesses.

- Techniques -
- Wash your hands before the start of mudras
- When fingers find the prana created should always be

Eyes -

- * Shambhu mudra - looking towards the eyebrow centre strengthens the eye muscles.
- * Nandkya dotak - looking towards nose tip helps in calming eyes and releasing disturbed emotions.
- * Krichon mudra - looking the finger to the upper palate stimulates the prana.
- * Kaki mudra - while looking at the nose tips, join the tips together
- * Bhruvini mudra
- * Manoh mudra
- * Sharmukhi mudra

- benefits - It calms the mind
- It removes the tension in the temples
- helps in concentration and reducing a state of mind, distraction
- helps in sitting in meditation for long periods
- soothes people with concentration, tension, pressure
- enhances concentration and prevents nervousness
- increases memory power and sharpens the air
- calms the nervous system.

KAYA (postural mudras)

These mudras are physical postures combined with breathing and concentration. Eg - Vipraschita Kaya Mudra and Yoga mudra

These mudras are known for relaxing the nervous system and increasing the lung capacity.

- Types + benefits -
- * Vipraschita Mudra -> This mudra harnesses the activities of the hypothalamus. The energy movement of prana in the and pigoala is balanced. Any of relaxation

* Paschim mudra -> This mudra brings balance into the digestive system and induces prana in the lower abdomen. It has all the benefits of mooladhara.

* Prana mudra -> After sitting in Padmasana, the hands join the mooladhara, sandhishirsa manjira and anahata chakra. Followed by open arms. This mudra awakes the vital energy and distributes it throughout the body.

* Shamayal mudra -> Also known as Balasana or child pose is a relaxation asana. It releases the spine into the underlying the abdominal organs.

* Yoga mudra -> Manages the abdominal organs while stretching the back. helps in relaxation of all the muscles and organs. It develops awareness and stimulates the manjira chakra

* Mandukji Mudra -> The frog gesture is a metaphor for cross-legged meditative asana. It attracts the mooladhara chakra. It calms the disturbances of the mind and nerves.

* Padagi Mudra -> Also known as the barrelled abdomen technique. It releases tension stored in the diaphragm and pelvic floor. It raises the level of prana and stimulates the manjira chakra.

BANDA (Lock Mudras)

Lock mudras combined mudra and bandha. They change the body with prana and prepare it for kundalini awakening.

- Types - Mula Bandha (See root lock)
- Jalandhara Bandha (See throat lock)
- Uddiyana Bandha (Lifting of the diaphragm)

ADHARA (practical Asana) -

They radiate power from the bottom of the spinal cord to the brain. They are performed on the pelvic floor area.

Technique -

- Sit in Padmasana / Ardha Padmasana / Sukhasana
- Back straight
- Use yoga mat or wood, to prevent the radiations coming out of the floor
- Hands are held in front of the nose. Bring the palms together in proper position in front of the abdomen, fingers are facing away from the nose.
- Keeping the fingers and the wrist together, spread the thumbs out to the side, creating space between the palms.
- Relax the shoulder and let the forearms rest against the abdomen
- Take several natural breaths or allow to the feelings and sensations created by the posture.

Types -

- Maha Mudra (Great)
- Ashwini Mudra (Horse)
- Vajrasana / Samyoga Mudra (Thunderbolt / Synthesis)
- Maha Bhadra Mudra (Great separating mudra)
- Maha Veerika Mudra (Great pleasing)

Benefits -

Helps to direct energy and back to the solar center of the body to cultivate deeper connection with earth's energy and potency.

MEDITATION

Derived from the Latin verb "meditari", meaning "to think", contemplate, devise, practice and meditate".

It is an intensely personal and spiritual experience. The desired purpose of each meditation technique is to channel normal working unconscious into a more positive direction by totally transforming one's state of mind. It is a spiritual practice that binds the mind, body and soul together.

Techniques -

The regularity of time - Some time to be maintained everyday so that the mind can settle down at that time.

The place - very important. A quiet and peaceful place with a cooling atmosphere is a must for dhyaana.

The most effective time - The dawn and dusk, that is, the Brahman mahurat and the evening, when the universe is charged with a high spiritual force and energy.

Direction - When sitting, face north or east or etc., in order to take advantage of favorable magnetic and solar vibrations.

Nothing - loose cotton clothes, feet allow to breathe and feet relaxed.

Eyes closed, back straight, legs crossed in any meditation post like bhairava, siddha, padmasana.

Palms rest on the knee facing up with the fingers loose.

- Consciously regulate the breath.
- Begin practice with 15 minutes and extend to 45 mins or 1 hour.
- Meditation is an effortless movement of the mind and does not should be done without focusing or focusing the body or mind.

Benefits -

- Physiological benefits -
 - It lowers oxygen consumption
 - Increases exercise tolerance
 - Helps in post-operative healing
 - Decreases muscle tension
 - Helps with weight loss
 - Good for people with high blood pressure
 - Enhances the immune system

Psychological benefits -

- Builds self-confidence
- Helps control our thoughts
- Reduces nervous behavior
- Less aggression
- Higher intelligence quotient score
- Reduces road rage
- Increases sense of responsibility
- Improves your character

Spiritual benefits -

- Increased intuition
- Improving vision
- Increased self-actualization
- Helps keep things in perspective
- Helps one discover their purpose
- Purifies part of mind, ego

Active Yang Style of meditation -

This form of meditation involves using an anchor to calm one's constantly chattering mind. Meditative anchors include focusing on the breath, a mantra, an image, or a physical quality.

The meditator follows a set of predetermined rules to help guide them through the experience.

Passive Yin style of meditation -

Here the meditator remains open and receptive throughout and doesn't try to filter out experience in any way. They allow their natural experience to unfold. The practitioner allows their mind to acknowledge any thoughts or sensations that may arise.

YIN MEDITATION	YANG MEDITATION
<ul style="list-style-type: none"> • Allowing the mind • Not forcing any experience • A receptive and passive form of meditation • Open-ended experience to explore your inner landscape • Use a mantra to come back to when you need grounding • Come to understand your inner world • Develop wisdom, compassion and equanimity • Allow space for negative emotions and resolution 	<ul style="list-style-type: none"> • Controlling the mind • Filtering out certain experiences • A direct and active form of meditation • Specific focus, e.g., mantra, breath, body, etc. • Use an anchor to ground you into your practice • Find peace within your inner world • Develop calm, concentration and equanimity • Focus on reaching a spiritual, emotional and physical state

SAGUNA Meditation -

Form of the deep yogic practice in which the yogi concentrates on something perceptible. A common focus in saguna meditation during yoga practice is on the breath, but focus could be on a mantra or image too. In this sense, the focal point is referred to as "sakti".

Saguna comes from the Sanskrit meaning "with attributes".

- Types -
 - Bhavana, a technique referred to as visualization giving not unlike both visualization and visualization
 - Japa, which utilizes mantras, repeated silently or aloud, vocal and from the mind

NIRGUNA MEDITATION -

Although saguna meditation moves the yogi along the path to enlightenment and union with the divine self, it is through nirguna meditation that such union is achieved. Here, the yogi focuses on with the divine.

V. Pooji

Certificate

Name: **M-AMIRTHARAJ** Class: **M-PEd II**

Roll No: **010** Exam No:

Institution: **YNCA College of physical education**

This is certified to be the bonafide work of the student in the _____ Laboratory during the academic

year 20 / 20

No. of practicals certified _____ out of _____ in the subject of _____

Teacher In-charge

Examiner's Signature _____ Principal

Date: _____ Institution Rubber Stamp

(N.B. The candidate is expected to return further journal of his/her passes in the subject)

(On the Revolution of the Heavenly Spheres)

- 1600 Galileo Galilei built his first telescope.
- 1687 Isaac Newton published Philosophiæ Naturalis Principia Mathematica (The Mathematical Principles of Natural Philosophy)
- 1705 Edmund Halley published A Synopsis of the Astronomy of Comets
- 1740 Alessandro Volta invented the electric battery.
- 1869 Dmitri Mendeleev published the Periodic Table
- 1873 James Clerk Maxwell published A Treatise on Electricity and Magnetism.
- 1895 Wilhelm Conrad Röntgen discovered X-rays.
- 1897 J. J. Thomson discovered the electron.
- 1900 Max Planck published information on Planck's constant.
- 1901 Guglielmo Marconi broadcasted the first transatlantic radio signal
- 1905 Albert Einstein published his special theory of relativity.
- 1922 Niels Bohr was awarded the Nobel Prize in Physics for his work on the structure of atoms.
- 1929 Dr. Edwin Hubble discovered what is now known as Hubble's Law
- 1930 Sir Charles Townes and Arthur Compton received the Nobel Prize in Physics for his "Raman Effect".

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Page No. _____

KINESIOLOGY

NAME : M. AMIRTHARAJ
CLASS : M.P. ED. II
Roll.No. : 201903010

Submitted to: Dr. Johnson Premkumar

Teacher's Signature _____

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Page No. _____

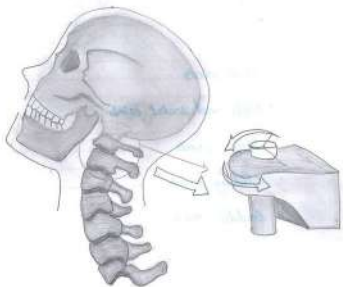
Various Joints of human body

1. Pivot joints
2. Ball and socket joints
3. Hinge joints
4. Sliding joints
5. Saddle joints

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Pivot Joints



VERTEBRAE

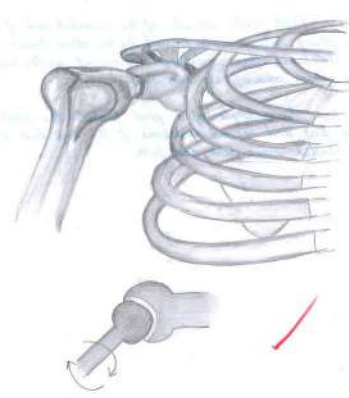
Pivot joints consist of the rounded end of one bone fitting into a ring formed by the other bone. This structure allows rotational movement, as the rounded bone moves around its own axis.

An example of a pivot joint is the joint of the first and second vertebrae of the neck that allows the head to move back and forth.

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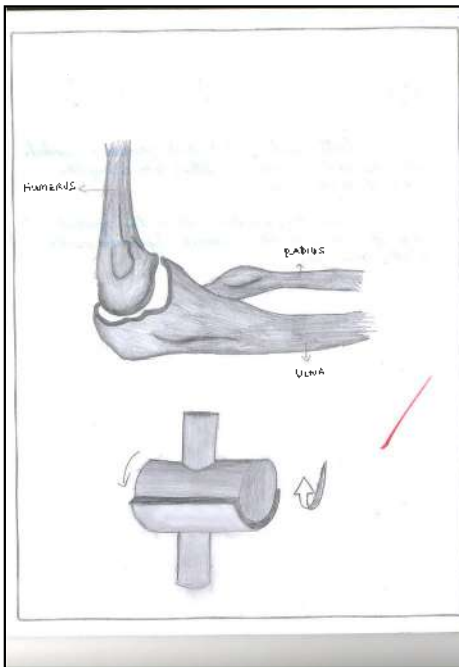
Ball and Socket Joints



Ball-and-socket joints possess a rounded ball-like end of one bone fitting into a cuplike socket of another bone.

This organization allows the greatest range of motion, as all movements types are possible in all directions.

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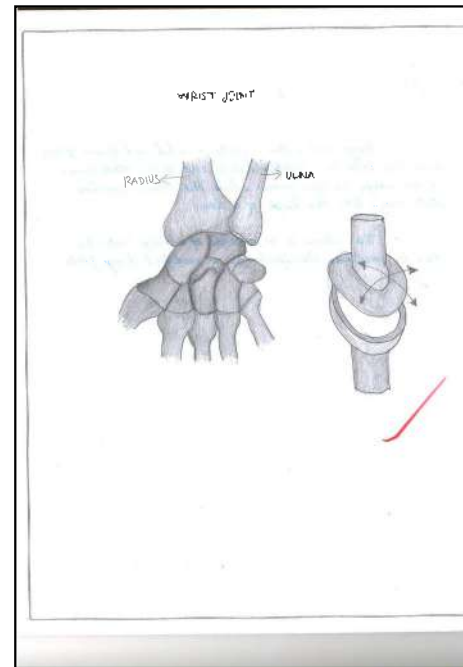
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Hinge Joints

Hinge joints, the slightly rounded end of end of one bone fits into the slightly hollow end of the other bone. In this way, one bone moves while the other remains stationary, like the hinge of a door.

The elbow is an example of a hinge joints. The knee is sometimes classified as a modified hinge joints.

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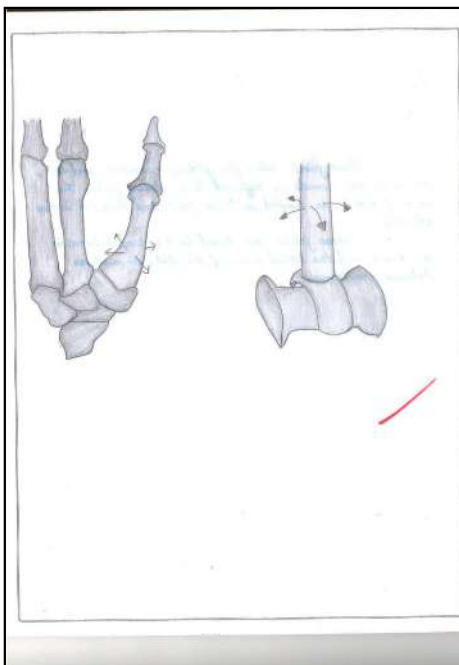
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Gliding Joints

These joints allow for gliding movements, and so the joints are sometimes referred to as gliding joints. The range of motion is limited in these joints and does not involve rotation.

Planar joints are found in the carpal bones in the hand and the tarsal bones of the foot, as well as between vertebrae.

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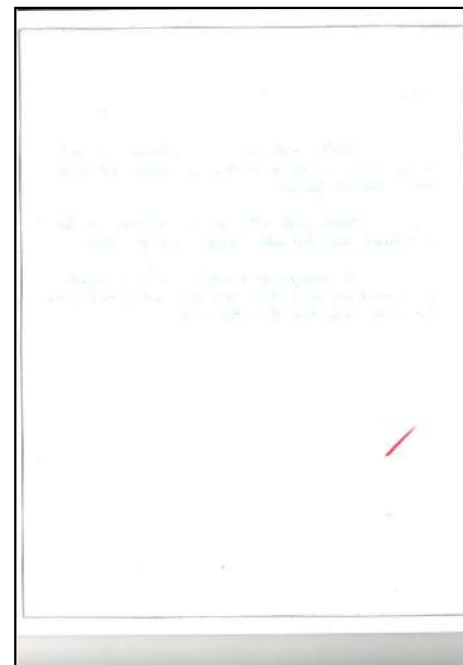
Saddle Joints

Saddle joints are so named because the ends of each bone resemble a saddle, with concave and convex portions that fit together.

Saddle joints allow angular movements similar to condyloid joints but with a greater range of motion.

An example of a saddle joints is the thumb joint, which can move back and forth and up and down, but more freely than the wrist or fingers.

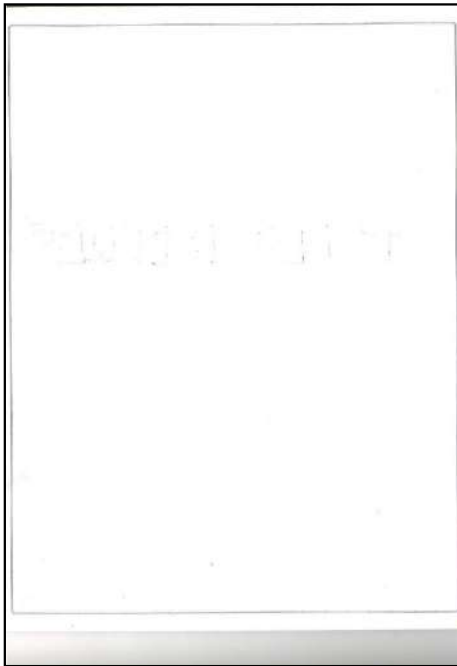
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TYPES OF BONES

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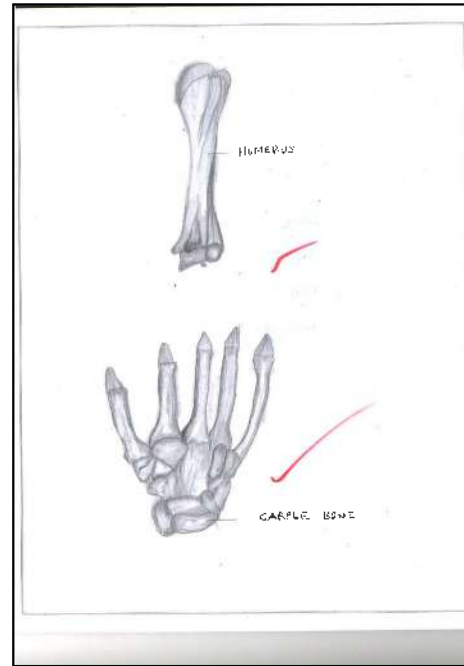
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Four Types of bones

Bones are classified by their shape:

1. Long
2. Short
3. Flat
4. Irregular

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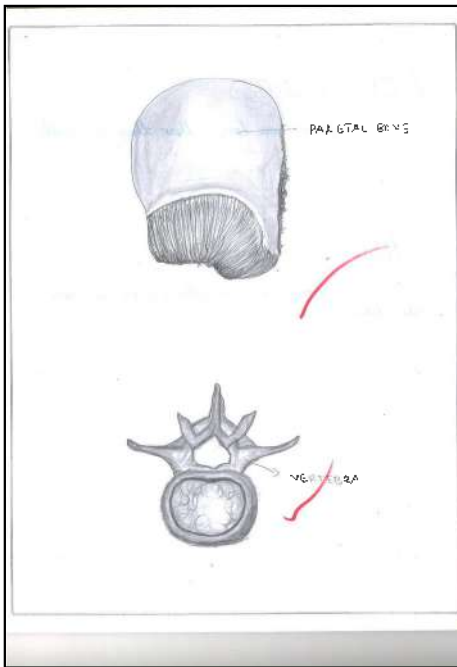
Long bones

Bones are longer than they are wide
(arms, legs)

Short bones

Bones are usually square in shape
cube like (wrist, ankle)

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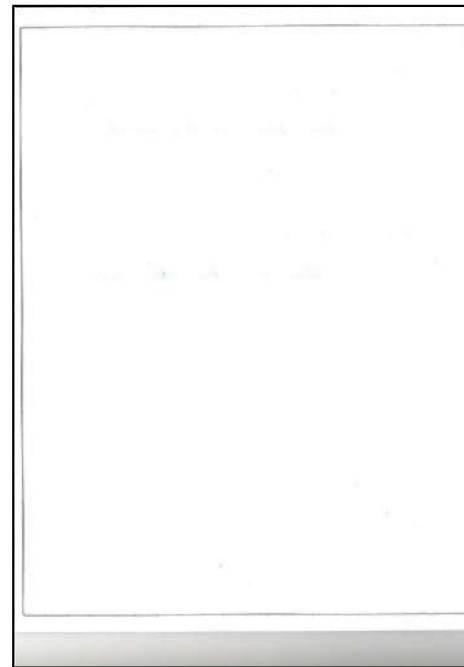
Flat Bones

These bones are flat, curved (skull, sternum)

Irregular bones

These bones have all shapes
(vertebrae, pelvis)

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MUSCLES OF UPPER BODY

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Muscles of the Upper Body

1. Biceps
2. Triceps
3. Deltoid
4. Deltoid Major
5. Deltoid Minor
6. Trapezius
7. Lattissimus Dorsi
8. Rhomboid Major
Rhomboid minor
9. Serratus Anterior

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Biceps Brachii

Origin

Short head: Tip of coracoid process of scapula

Long head: Supraglenoid tubercle of scapula

Insertion
Tuberosity of radius and fascia of forearm

Action
Supinates forearm and, when it is supine, flexes forearm.

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Triceps

Origin

Longhead: infraglenoid tubercle of scapula

Lateral head: posterior surface of humerus, superior to radial groove.

Medial head: posterior surface of humerus, inferior to radial groove.

Insertion
Proximal end of olecranon process of ulna and fascia of forearm.

Action
Chief extensor of forearm; long head steadies head of abducted humerus.

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Deltoid

Origin
Lateral third of clavicle, acromion and spine of scapula

Insertion
Deltoid tuberosity of humerus

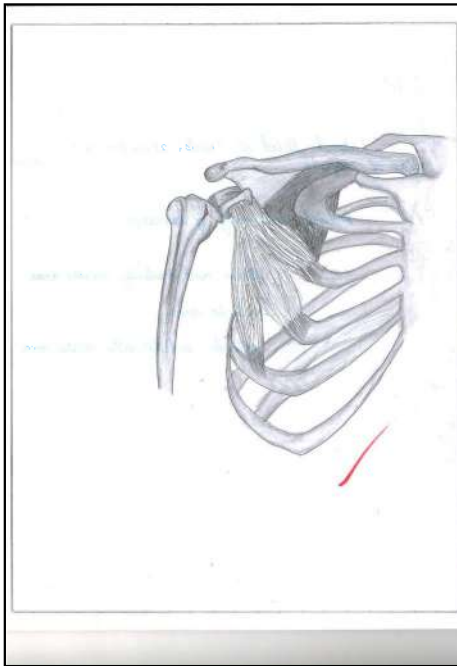
Action

Anterior part: flexes and medially rotates arm.

Middle part: abducts arm.

Posterior part: extends and laterally rotates arm.

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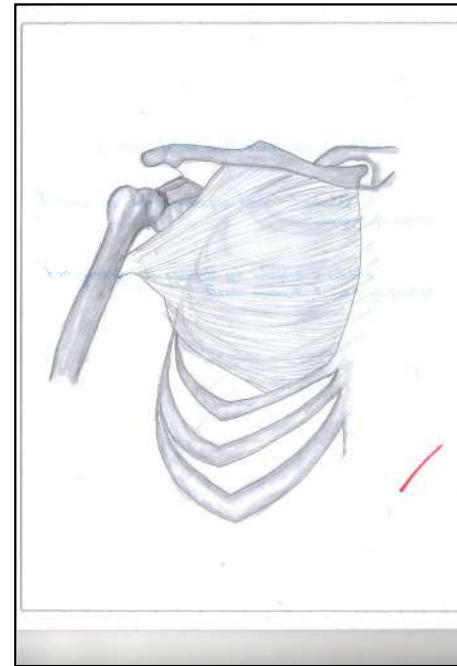
Pectoralis Minor

Origin 3rd to 5th ribs near their costal cartilages

Insertion Medial border and superior surface of coracoid process of scapula

Action stabilizes scapula by drawing it inferiorly and anteriorly against thoracic wall.

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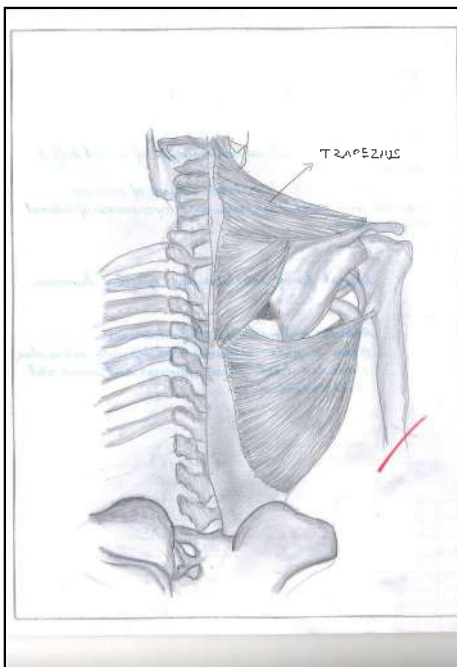
Pectoralis Major

Origin
Clavicular head: anterior surface of medial half of clavicle.
Sternocostal head: anterior surface of sternum, superior six costal cartilages, and aponeurosis of external oblique muscle.

Insertion Lateral lip of intertubercular groove of humerus

Action Adducts and medially rotates humerus; draws scapula anteriorly and inferiorly; action along clavicular head flexes humerus and sternocostal head extends it.

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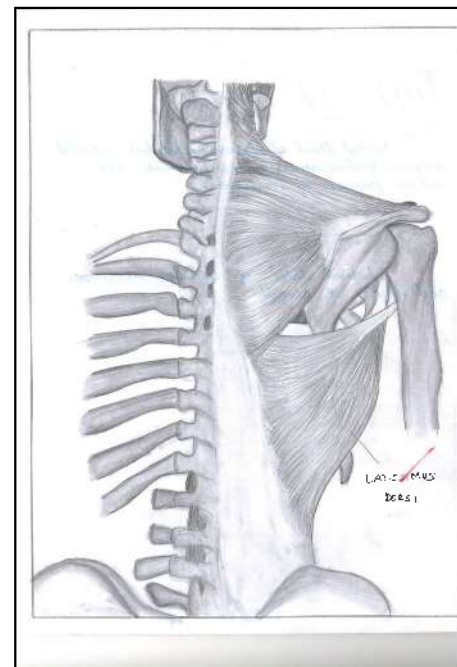
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Trapezius

Origin Medial third of superior nuchal line; external occipital protuberance, nuchal ligament, and spinous processes of vertebrae.

Insertion Lateral third of clavicle, acromion, and spine of scapula.

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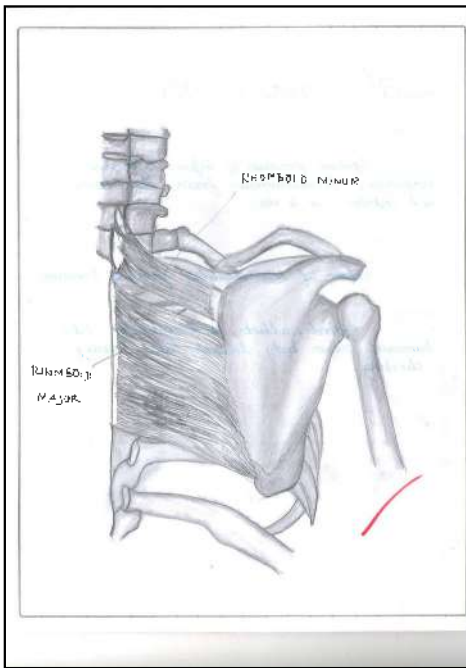
Latissimus Dorsi

Origin
 Spinous process of inferior 6th thoracic vertebrae, thoracolumbar fascia, iliac crest, and inferior 2 or 4 ribs.

Insertion Floor of intertubercular groove of humerus.

Action Extends, adducts, and medially rotates humerus; raises body forward arms during climbing.

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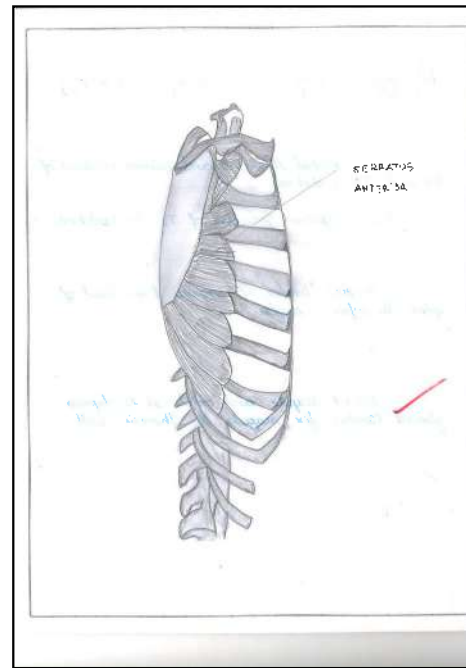
Rhomboid Major & Minor

Origin
 Minor: nuchal ligament and spinous processes of C7 and T1 vertebrae
 Major: Spinous processes of T2 - T5 vertebrae

Insertion
 medial border of scapula from level of spine to inferior angle

Action
 Retract scapula and rotate it to depress glenoid cavity; fix scapula to thoracic wall.

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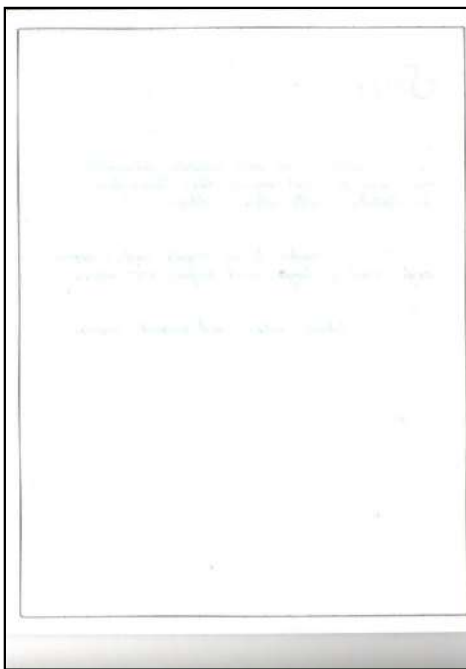
Serratus Anterior

Origin
 upper 8 ribs and anterior intercostal membranes from midclavicular line. Lower four interdigitating with external oblique.

Insertion
 Inner medial border scapula (and 2: upper angle; 3 and 4: length costal surface 5 & 6: inferior)

Action
 lateral rotate and protract scapula.

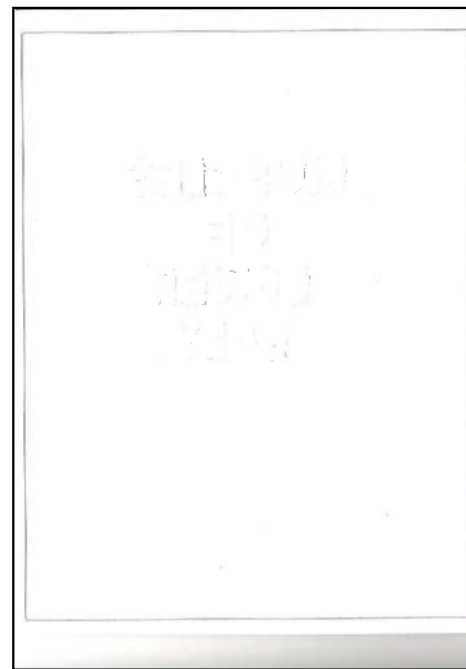
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MUSCLES OF LOWER BODY

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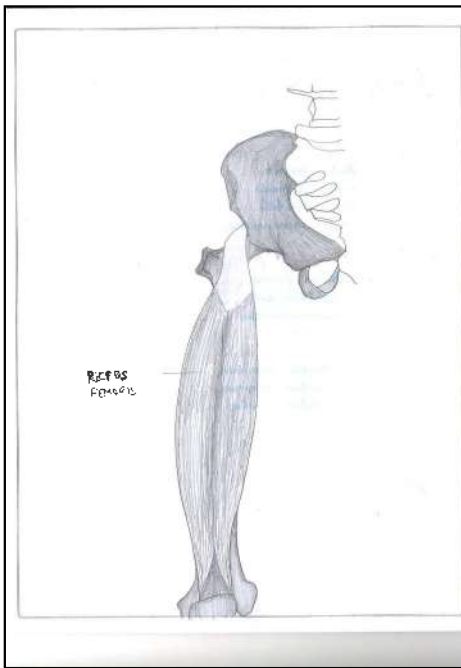


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Lower Body Muscles

- 1) Quadriceps Group Of Muscles
 Rectus femoris
 vastus lateralis
 vastus medialis
 vastus intermedius
- 2) Sartorius Muscle
- 3) Hamstring Group Of Muscles
 Biceps femoris
 Semitendinosus
 Semimembranosus
- 4) Gluteus Group Of Muscles
 Gluteus maximus
 Gluteus minimus
 Gluteus medius
- 5) Obturator Muscle:

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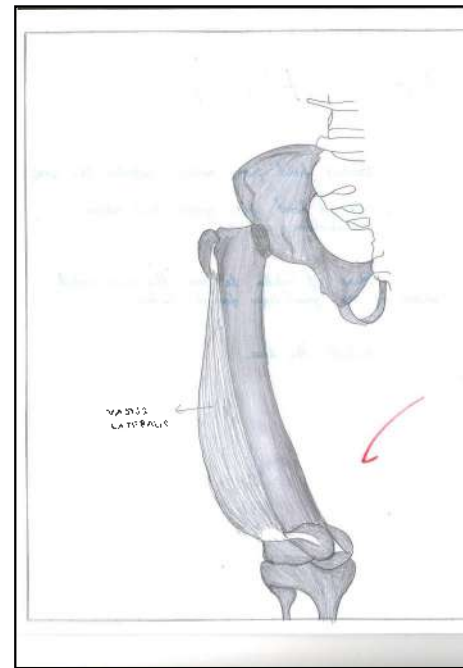
Rectus Femoris

Origin:
 Straight head from anterior inferior iliac spine,
 reflected head from groove just above acetabulum.

Insertion:
 Base of patella to form the more central portion of the quadriceps femoris tendon.

Action:
 Extends the knee.

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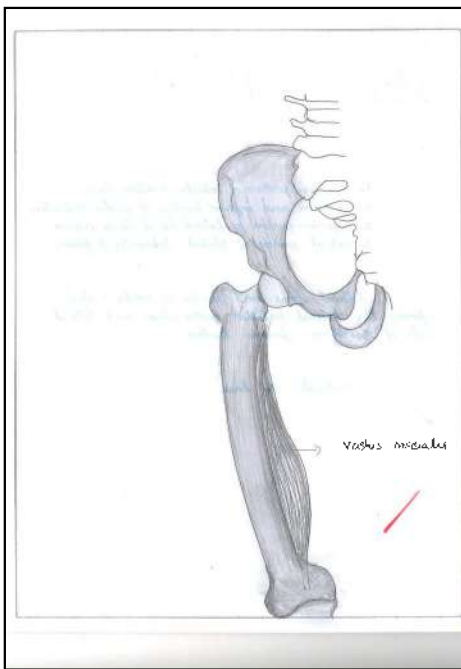
Vastus Lateralis

Origin:
 1. Superior portion of intertrochanteric line
 2. Anterior and inferior borders of greater trochanter,
 3. Superior portion of lateral lip of linea aspera
 4. Lateral portion of gluteal tuberosity of femur.

Insertion:
 Lateral base and border of patella; also forms the lateral patellar retinaculum and lateral side of quadriceps femoris tendon.

Action:
 Extends the knee.

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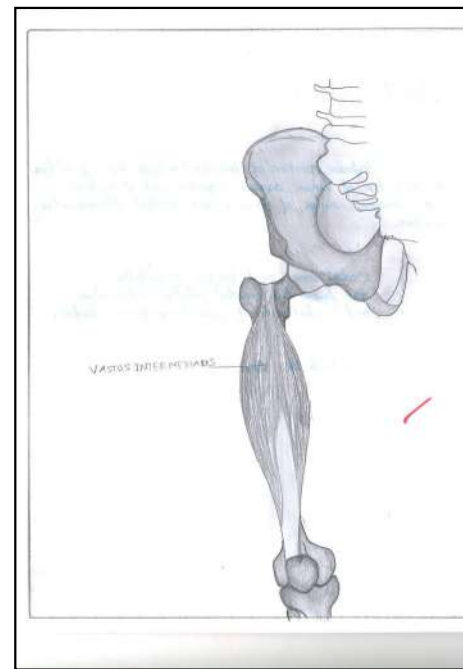
Vastus Medialis

Origin:
 Inferior portion of intertrochanteric line, spiral line, medial lip of linea aspera, superior part of medial supracondylar ridge of femur, and medial intermuscular septum.

Insertion:
 Medial base and border of patella; also forms the medial patellar retinaculum and medial side of quadriceps femoris tendon.

Action:
 Extends the knee.

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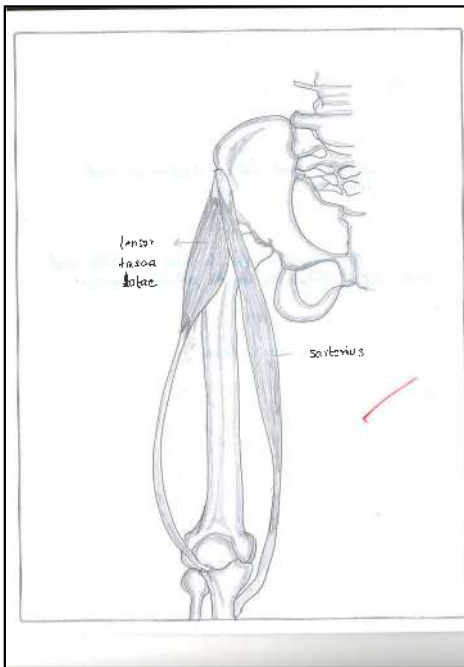
Vastus Intermedius

Origin:
 Anterior and lateral surface of shaft of femur.

Insertion:
 Quadriceps tendon to base of patella and onto tibial tuberosity via the patellar ligament.

Action:
 Extends the knee.

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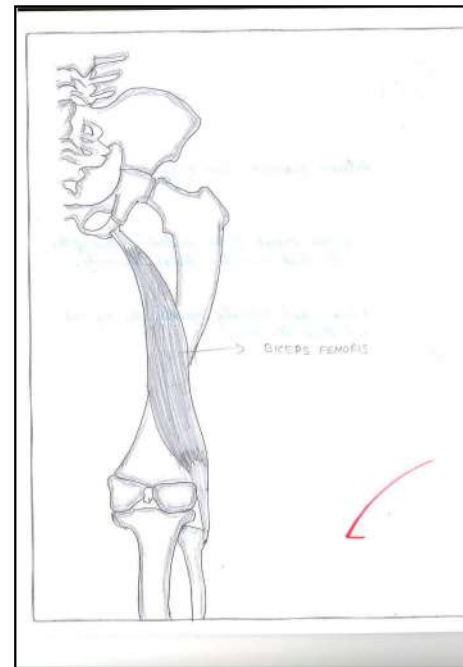
Sartorius

Origin: Anterior superior iliac spine.

Insertion: Superior aspect of the medial surface of the tibial shaft near the tibial tuberosity.

Action: Flexes and laterally rotates the hip joint and flexes the knee.

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Biceps Femoris

Origin: Longhead from common tendon with Semitendinosus from superior medial quadrant of the posterior portion of the ischial tuberosity. Short head from lateral epicondyle of femur and lateral supracondylar ridge of femur and lateral intermuscular septum of thigh.

Longhead Insertion: Primarily on fibular head; also on lateral collateral ligament and lateral tibial condyle.

Action: Flexes the knee, and also rotates the tibia laterally; long head also extends the hip joint.

Short head Insertion: Primarily on fibular head; also on lateral collateral ligament and lateral tibial condyle.

Action: Flexes the knee, and also rotates the tibia laterally; long head also extends the hip joint.

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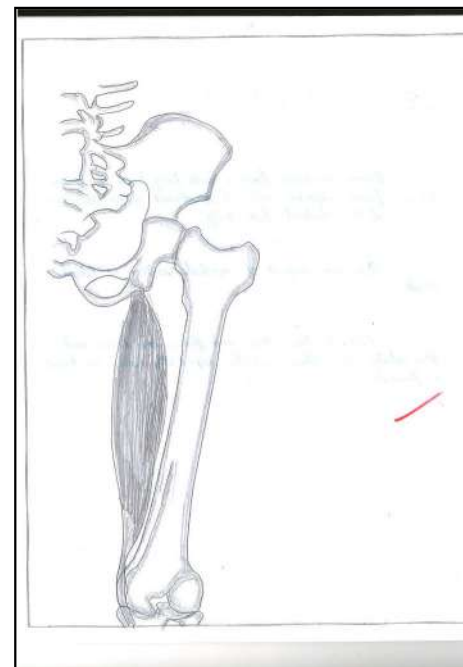
Semitendinosus

Origin: From common tendon with long head of biceps femoris from superior medial quadrant of the posterior portion of the ischial tuberosity.

Insertion: Superior aspect of medial portion of tibial shaft.

Action: Extends the thigh and flexes the knee, and also rotates the tibia medially, especially when the knee is flexed.

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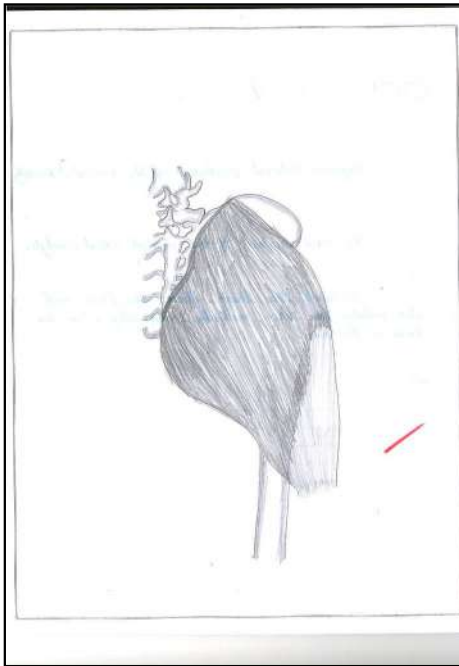
Semimembranosus

Origin: Superior lateral quadrant of the ischial tuberosity.

Insertion: Posterior surface of the medial tibial condyle.

Action: Extends the thigh, flexes the knee, and also rotates the tibia medially, especially when the knee is flexed.

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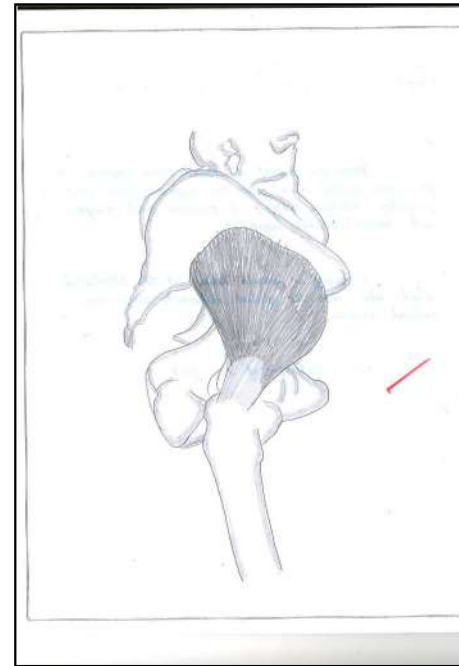
Gluteus Maximus

Origin: posterior aspect of dorsal ilium posterior to posterior gluteal line, posterior superior iliac crest, posterior inferior aspect of sacrum and coccyx, and sacrotuberous ligament.

Insertion: primary in fascia lata at the iliotibial band; also into the gluteal tuberosity on posterior femoral surface.

Action: Major extensor of hip joint.

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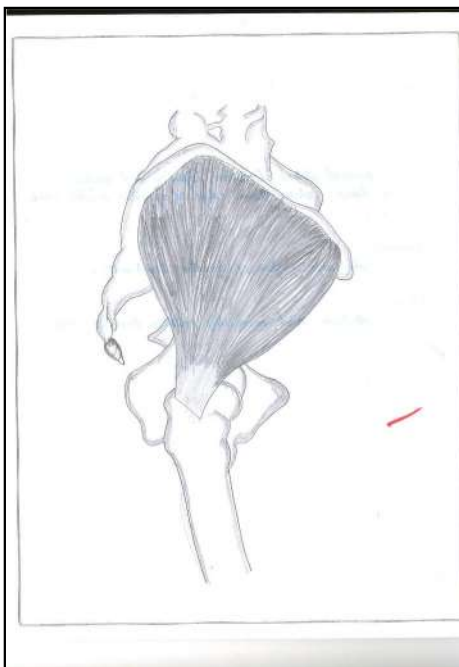
Gluteus Minimus

Origin: Dorsal ilium between inferior and anterior gluteal lines, also from edge of greater sciatic foramen.

Insertion: Anterior surface of greater trochanter.

Action: Abducts and medially rotates the hip joint.

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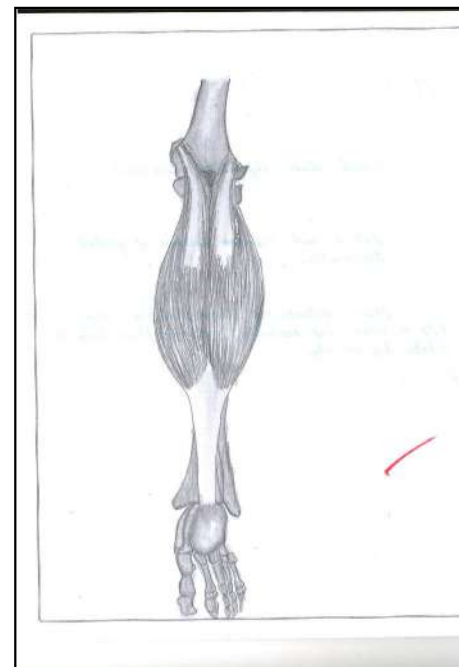
Gluteus Medius

Origin: Dorsal ilium inferior to iliac crest.

Insertion: Lateral and superior surface of greater trochanter.

Action: Major abductor of thigh; anterior fibers help to rotate hip medially; posterior fibers help to rotate hip laterally.

Teacher's Signature _____



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Gastrocnemius

Origin: medial head from posterior nonsarticular surface of medial femoral condyle; Lateral head from lateral surface of femoral lateral condyle.

Insertion: The two heads unite into a broad aponeurosis which eventually unites with the deep tendon of the soleus to form the Achilles tendon, inserting on the middle 1/3 of the posterior calcaneal surface.

Action: powerful plantar flexor at ankle.

Teacher's Signature _____

Sports organisations in Indian sports.

1. Indian Olympic Association [IOA]
2. All India Football Federation [AIFF]
3. All India Tennis Association [AITA]
4. All India Chess Federation.
5. Board of Control for Cricket in India [BCCI]
6. Athletics Federation of India [AFI]
7. Badminton Club of India [BCI]
8. All India Carrom Federation [AICF]
9. Badminton Association of India
10. Bridge Federation of India
11. Cycle Polo Federation of India [CPFI]
12. Cycling Federation of India
13. Equestrian Federation of India [EFI]
14. Hockey India
15. Indian Mountaineering Foundation [IMF]
16. Indian Parachuting Federation.
17. Indian Triathlon Federation [ITF]
18. Professional Golf Tour of India
19. Squash Rackets Federation of India [SRFI]
20. Table Tennis Federation of India [TTFI]
21. The Federation of Water Sports Clubs of India [FWSCI]

22. The Indian Golf Union.

23. Tug of War Federation of India [TWFI]

24. Volleyball Federation of India

25. Yachting Association of India [YAI]

26. Handball Federation of India [HFI]

27. Throwball Federation of India [TFI]

28. The Amateur Kabaddi Federation of India

29. Archery Association of India [AAFI]

30. All India Wrestling Association.

31. Sports Authority of India [SAI]

SPORTS AUTHORITY OF INDIA [SAI]

The Sports Authority of India (SAI), a successor organisation of the IX Asian Games held in New Delhi in 1982, was set up as a Society registered under the registration of Societies Act, 1960, in accordance with the Resolution No. 1-1/83. SAI dated 25.01.1984 of Department of Sports, Govt. of India. It was established with the objective of promotion of games and sports in the country. It was also assigned the responsibility of maintaining and utilising the existing stadium in Delhi which were reconstructed/rebuilt during the IX Asian Games. Subsequently, in order to adopt an integrated approach towards promotion and development of sports authority, Society for National Institutes of Physical Education and Sports (SNIPES) was merged with SAI w.e.f. May, 1987.

SAI is an apex body for promotion of sports in the country. The General Body, being headed by successive Prime Ministers as its President. The Governing Body of SAI is headed by the Union Minister for Human Resource Development and has Union Minister of State for Youth Affairs and Sports as its Vice Chair Person. As per the SAI Rules the General Body should generally meet annually whereas the Governing Body should ordinarily meet atleast once in each quarter of the financial year.

Secretary SAI is the member Secretary of the General Body and the Governing Body.

In the year 1998 the General Body and Governing Body of SAI were reconstituted by the Department of Youth Affairs and Sports, Ministers of Human Resource Development, Govt. of India. Unlike in the past, Hon'ble Prime Minister is now the ex-officio President of the General Body of SAI.

Composition of the General Body and the Governing Body.

General Body:
The General Body has 27 members out of which 16 are ex-officio members out of which 16 are ex-officio members and 27 are non-officio members who are nominated by the Govt. of India under different categories.

Governing Body:
Governing Body has 28 members out of which 16 are nominated by the Govt. of India and the remaining 12 are ex-officio members.

Regional centres of SAI:

The Sports Authority of India has six Regional centres with Headquarters at Bangalore (Southern Centre), Calcutta (Eastern Centre), Chandigarh (Northern Centre), Delhi (Central Centre), Gandhinagar (Western Centre) and Imbhal (North Eastern Centre).

National Sports Awards

- ↳ Arjuna Award
- ↳ Rajiv Gandhi Khel Ratna Award
- ↳ Dronacharya Award
- ↳ Maulana Abul Kalam Azad Trophy

The CIVILIAN AWARDS

- ↳ Bharat Ratna
- ↳ Padma Vibhushan
- ↳ Padma Bhushan
- ↳ Padma Shri

National Sports Personalities

① Athletics:

Milka Singh, Ajmer Singh, Lakh Singh, Suresh Babu, P. T. Usha, Wilfred Brada, Anil Kumar Singh, V. S. Chauhan (Iron man of Asia), Puja Babbar, Geetika, Seema Anil.

② Badminton:

Prakash Padukone, P. Pradyumn Chaudhary, Abhinav Bindra, Saina Nehwal

③ Billiards & Snooker:

Ashta Chandilaya, Parvati Devi, Anil Kumar.

11. Shooting:

Neelima Bhargava, Soma Ghosh, Rajkumari, Abhinav Bindra, Jaspal Rana, Chetan Singh, Sameer Anand, Sankarjit Das

12. Squash:

Jashim Chowdhury, Vidushi Reddy, Neelima Subbaraj, Priyanka Yadav.

13. Table Tennis:

Chetan Babbar, Roman

14. Tennis:

Leander Paes, Mahesh Bhupathi, Mani Mukherjee, Sania Mirza, Rohan Bopanna.

15. Weightlifting:

Neelima Devi, Sankarjit Das, Karan Mehta, Pradip Kumar, T. Mukta, Vijay Prakash Chandra Kumar.

16. Wrestling:

Ramesh Kumar, Vishnu Kumar, Sandeep Patil, S. Chandra, Raj Kumar, Chandigarh

17. Boxing:

Mohammed Ali Qamar, Sun Bahadur Panigrahi, Jitender Kumar

18. Chess:

Vishwanathan Anand, K. Sasi Kiran, R. S. Ramesh.

19. Carrom:

Bishan Singh Bedi, Sunil Gavaskar, Kapil Dev, Manoj Singh, Javajal Singh, Sachin Tendulkar, Anil Kumble, Saavay Chavhan, Rahul Dravid, Harbhajan Singh, Mahendra Singh Dhoni.

20. Golf:

Harmeet Bahra, Arjun Arora.

21. Football:

Ranjit Pruthi, V. J.

22. Hockey:

K. D. S. Babu (All India), Chohan Chand (Victoria Cross Award), Balbir Singh (Sonia), Balbir Singh (Juni), Prithvi Pal Singh, Surjit Singh, Charjit Singh, Arjun Singh, Dharm Singh, Dharm Singh.

23. Judo:

Kiran Singh, Bhupinder Singh.

UNIT - II

Journalism and sports education:

1. With the mass communication at its disposal, the journalist can be taught the skills needed for their respective field of activity.
2. The basic need of a developing country is literacy.
3. Journalism is the publication of news and views on various aspects of human activities in newspapers and periodicals.
4. In a broader sense, the Journalism is to convey national policies to the public, and to keep the government, at local, state and central levels.

Different types of Bulletins:

- 1) Five minutes bulletin.
- 2) Ten minutes bulletin.
- 3) Fifteen minutes bulletin.
- 4) 1100 hourly bulletin
- 5) 1200 " "
- 6) 1300 " "
- 7) Hourly .. "
- 8) Special .. "
- 9) Daily .. "
- 10) weekly .. "
- 11) Fort nightly .. "
- 12) Monthly .. "
- 13) Bi-annual .. "
- 14) Annual .. "
- 15) Radio .. "
- 16) Television .. "
- 17) Air .. "

3. For a 5 min bulletin done from the pool items the time must be a hour before the schedule at going on the air and another half an hour in the editor is relying on the sources.

4. Studying the material that is already available. The previous pools, day pool and II and both the morning pools.

5. along with the previous bulletins of the cycle, would constitute the material.

6. In the other case, the editor has to study not only the previous bulletins of series but also the agency copy.

7. Reporter's copy and monitoring reports received since the last bulletin went on the air.

1. In the previous two chapters we saw how a bulletin is structured and the drill you have to follow in compiling a bulletin.

2. we look the ten minute bulletin as a standard radio news bulletin and its features and the features of fifteen min bulletin.

3. we also discussed a five min bulletin briefly.

4. Some of these bulletins, for audiences speaking the various Indian languages, are clubbed together, and a common English script is compiled in the GNR.

Compiling Bulletin:

1. For ten min bulletin the editor must begin this work atleast 2 1/2 hrs before the time of broadcast.

2. If you are doing one of the 15 min bulletins the work must begin 3 1/2 hrs PRIOR to the broadcast.

The structure of bulletins:

1. A number of items put together makes a news bulletin, but a bulletin is not just a string of individual news item brood cat at the scheduled time the bulletin is.

2. More than a sum total of a number of stories the bulletin is a collective from in which the separate news items are brought into a coherent order and some relationship.

3. Headlines also referred to as the main points.

4. The body of the bulletin which consists of different news items.

5. The head lines being repeated at the end of the bulletin after which comes the closing announcement.

6. That is the end of the news or that is the end of this bulletin the announcer or the station then chimes in and tells you.

7. headline should be crisp short and must not carry too many details at the same time the head line must not vague.

SEM III
MCC 301 - SCIENTIFIC PRINCIPLES OF SPORTS TRAINING

TOPIC - MOTOR COMPONENTS
MEANS AND METHOD OF TRAINING

MOTOR COMPONENTS

- Agility ✓
- Coordination ✓
- Speed ✓
- Power ✓
- Balance ✓
- Reaction Time ✓
- Strength ✓

MEANS AND METHODS OF TRAINING THEM

① AGILITY

The ability to change direction and accelerate while in motion. And it has three phases, eccentric, isometric and concentric.

They can be trained or improved through -

- Lateral Plyometric Jumps - help build explosive power, balance and coordination by using natural body weight
- Forward Kneeling High knee drills - improve foot coordination and speed for all field sports athletes.
- Lateral Kneeling Side - to side Drills - improve knee and ankle stability, making them ideal for court sports.

- Most athletes agility and explosive speed are inheritable when one has appropriate leg strength.
- Jump Box Drills - great for quadriceps, glutes and hamstring muscles

• L Drills - to develop rapid change of direction ability and speed (cone drill).

• Shuttle Run - easy way to test cone high. Turn into a basic conditioning program, while building speed, agility and endurance.

② COORDINATION

The ability to select the right muscle at the right time with proper intensity to achieve proper action. It utilizes areas of the brain known as cerebellum. They can be trained through -

- Jumping rope ✓
- Juggling ✓
- Padelon Hockey ✓
- Juggling ✓

③ SPEED

The ability to move all or part of the body as quickly as possible.

They can be trained through -

• Hill Sprints - uphill sprints at an all-out speed for 10 to 20 seconds.

• Maximal Run - use 60% MVT workouts, and works at high intensity for a short period of time, recovery and repetition.

• Box Jumps - to improve speed and fitness

• Long slow runs - builds aerobic capacity which helps improve speed during shorter bursts.

• Running workouts, strength exercises and agility exercises

④ POWER

The amount of energy transferred or converted per unit time.

They can be trained through -

• Bumper to Box Jumps - 10 sets of three reps, rest 45 seconds

• Back Squat - 5 sets of 5 reps with a pause, rest 3 minutes

• Squat High Pull - 3 sets of 3 reps, rest 2 minutes.

⑤ BALANCE

is to stay upright or stay in control of body movement. Improved balance and muscle group coordination will naturally increase body's ability to control itself during challenging tasks.

It can be improved through -

- Single leg stance
- Squats
- Tandem Walking (walking one line in straight, heel to toe)
- Amputation with high knees
- Side stepping
- Use of Balance Pad, ball and beam.

⑥ REACTION TIME

is an interval between an athlete or a ball being, seeing their opponent's move and responding to it (after).

It can be trained through -

- Ladder training exercises
- Cone Drill
- Back Drops Drill
- Reactive Sprint and Backpedal Drill
- Reactive Cone Drill

⑦ STRENGTH

The ability to exert force in order to overcome resistance.

It can be trained through -

- Resistance band exercises
- Squats
- Hip Thrusts
- Chest Press
- Weightlifting
- Bodyweight exercises

4/5

1 - ATM

SEM II

SPORTS NUTRITION & HEALTH PROMOTION

UNIT IV - INJURY PREVENTION

CIGARETTE SMOKING

RISK FACTORS
METHODS TO STOP SMOKING
EXERCISE
DIET

Smoking can cause lung disease by damaging your airways and the small air sacs (alveoli) found in your lungs. Lung disease caused by smoking includes COPD, which includes emphysema and chronic bronchitis, lung cancer.

A cigarette is a narrow cylinder containing combustible material, typically tobacco, that is used to burn paper for smoking.

Why Cigarette? ...
Nicotine and other chemicals in tobacco smoke are easily absorbed into the blood through the lungs. From there, nicotine quickly spreads throughout the body. When taken in small amounts, nicotine causes pleasant feelings and distracts the user from unpleasant feelings. This makes the tobacco user want to use more.

RISK FACTORS -

- Smoking damages the heart and blood circulation, increasing risk of developing conditions:
 - Coronary heart disease
 - heart attack
 - stroke
- chemicals like nitrosamine, carbon monoxide, tar, benzene, arsenic and formaldehyde found in cigarettes, causes:
 - Cardiovascular disease
 - cancer (lung): death
 - chronic lung disease
 - diabetes

- COPD (Chronic obstructive pulmonary disease), an obstructive lung disease that makes it hard to breathe
- Asthma
- Reproductive Effects in Women
- Premature, low birth-weight babies
- Glaucoma, Cataracts and Age-Related Macular Degeneration
- Cancer -
 - Colon
 - Cervix
 - Liver
 - Stomach
 - Pancreatic

METHODS TO STOP SMOKING -

① Nicotine replacement therapy -

- Short acting nicotine replacement therapies such as nicotine gum, lozenges, nasal sprays or inhalers - can help ease nicotine cravings.
- Prescription nicotine in a nasal spray or inhaler.
- nic - nicotine patches
- Prescription non-nicotine stop-smoking medications such as bupropion (Zyban) and varenicline (Champix)

- ② Avoid triggers -
- Identify your trigger situations and have a plan in place to avoid them entirely or get through them without using tobacco
- ③ Delay -
- Do something to distract yourself. Try going to a public place, like a gym. Have simple tasks that may be enough to distract your tobacco craving.
- ④ Chew on it -
- Chew on sugarless gum or hard candy, or munch on raw carrots, celery, nuts or sunflower seeds - something crunchy & satisfying to fight a tobacco craving.
- ⑤ Don't have 'just one' -
- Never feel yourself tabs believing that you can stop with 'just one'.
- ⑥ Physical Activity -
- Can help ease distress of nicotine cravings and reduce stress naturally. Even short bursts of physical activity - can make a tobacco craving go away.
- ⑦ Positive distraction techniques -
- Smoking may have been your way to deal with stress. Practice deep breathing exercises, muscle relaxation, yoga, massage or listening to calming music.

- ⑧ Call for reinforcements -
- Touch base with a family member, friend or support group member for help to boost effort to resist a tobacco craving.
- ⑨ Go online/offline for support -
- Join stop smoking program/website. Or read a quitter's blog and post encouraging messages for someone else who might be struggling with tobacco cravings.
- ⑩ Remind yourself of the benefits -
- Write down or say out loud the reasons you want to stop smoking and resist tobacco cravings.

EXERCISE

Withdrawal symptoms and cravings for cigarettes decrease during exercise and up to 30 minutes after exercising. Exercise decreases appetite and helps limit the weight gain some people have when they quit smoking. Even moderate intensity exercise reduces the severity of nicotine withdrawal symptoms. Some are as follows -

- Walking, swimming, dancing, jogging, cycling, and boxing are a few types of aerobic exercises.
- Jogging, biking, strength training
- Endurance (aerobic) exercise

Citrus increases one's body's metabolism rate, leading to burning of nicotine faster, reduces stress

DIET

Food and drinks that could help smokers quit -

- Fruits & vegetables - Cigarettes block the absorption of important nutrients, such as calcium and vitamins C and B.
- Green Tea
- milk & dairy
- Sugar-free gum and mints.
- Vitamin B12 - abundant in yogurt and other healthy dairy products.
- B6 (fish, meat, potatoes, whole grains)
- B9 C (fruit & green leafy vegetables, dried beans, lentils, broccoli)
- Dry herb, oranges, spinach, berries, carrot juice
- Vitamin C, B6, B12, A1 - bananas & potassium & magnesium which assist the body to cope and deal with the effects of quit smoking.
- Tomatoes (lycopene)
- Garlic (allicin, acts as a powerful antibiotic agent & helps overcome respiratory infections that clog our lungs & leads to breathlessness and congestion)