MODEL ANSWER

M.P.Ed.- III Semester
Sports Medicine
Paper III

AS-2597

MM-60

Section- A

All questions are compulsory and carries equal marks 20 marks (10X2)

(i). Write the meaning of Sports Medicine.

Sports medicine is a branch of medicine that deals with Physical Fitness, treatment and prevention of injuries related to sports and exercise.

Sports medicine is the area which creates a positive environment, so an athlete converts his all genetic potentialities into phenotypic realities.

(ii). List two water soluble vitamins.

Vitamins---B and C

(iii). What does R and E stands for in RICE.

R—stands for rest and E- stands for Elevation.

(iv). Write two sports injuries of your sports.

Sprain, Strain, Abrasion, laceration, Fracture, dislocation etc.

(v). Define malnutrition.

Malnutrition is defined as a pathological state resulting from relative or absolute deficiency or excess of one or more essential nutrients.

(vi). List two category of drugs banned by IOC.

Stimulants, Narcotics, Androgenic Anabolic steroids, Diuretics, Peptide hormones and analogs.

(vii). Write three body types as explained by Sheldon.

Ectomorph, Mesomorph, Endomorph.

(viii). Write the components of fitness.

Muscular strength, Muscular endurance, speed, cardiovascular endurance, body composition, Flexibility etc.

(ix). List the common old age problems of athletes.

1. Overuse injuries 2. Tennis elbow 3. Sublingual hematoma (black toe nail)
4. Joggers nipple 5. Stress fracture 6. UTI
7. Injuries to the genital organs. 8. Fungal infections. 9.Habitual dislocation of joints. 10. Low haemoglobin

10. Chronic Pains

(x). What do you mean by overuse injuries?

Overuse injuries are those injuries which the athletes often encounters. When any injury takes place and the athlete carry on with it without treating it completely or treating it incompletely, they takes a serious toll and the athlete faces serious consciences. One of example is tennis elbow.

Section- B

Attempt one question from each unit, all questions carry equal marks-------40 marks. (5X8)

UNIT-I

1.. Explain the meaning, need and scope of Sports Medicine in detail.

Sports medicine is a branch of medicine that deals with Physical Fitness, treatment and prevention of injuries related to sports and exercise.

Sports medicine represents the efforts of medical science and arts theoretically and practically to analyze the influence of the movement, training and sports as well as hyper or hypo kinesea i.e on healthy, sick and handicapped human beings of all age group. The findings are use full for preventive, therapeutic and rehabilitative purposes.

sports medicine is, in fact, the science of remaining healthy, of preventing premature strain on the system, and of providing training which is designed to benefit the organs' functions and which will therefore contribute towards prolonging life.

Sports medicine is the area which creates a positive environment, so an athlete converts his all genetic potentialities into phenotypic realities.

Need of Sports medicine:-

1. Talent Identification. 2. Formation & Evaluation of Physical Education Programe.
3. Development of field and laboratory tests (Fat % etc). 4. Prevention of accidents & injuries
5. Provides sound principles for sports training. 6. Treatment of sports injuries.
7. Provides guidelines on drugs and doping 8.Detection of drug use in sport
9. Provides guidelines and principles of exercise for different age groups.
10. Tells about the right food, nutrition and supplements. 11. Effect of environment
11. Warming and cooling principles 13. Sports kit, guards and protector

Scope of Sports Medicine:-

1. In the play fields. 2. In the laboratories 3. Gymnasium
4. Schools, Colleges & Universities. 5. Clubs & swimming pools 6. Car rallies.

7. Recreational activities. 8. Combative Sports 9.Adventure Sports.
11. Competitive Sports. 11. Sports training 12.Daily life activities.

OR/

Write the aims and objectives of Sports Medicine.

The main objective of sports medicine is to prevent the damage to the human system caused mostly by inactivity i.e lack of movement or hypokinesia due to sedentary habits of modern world with various push button facilities, automation and lack of physical exercise or the damage caused to the sportsmen because of excessive training and load in the competitive world.

The other objectives are:-

1. Prophylactic health care-
   a). Maintenance of fitness.
   b).Detection of disorders.
   c).Functional evaluation.
   d).Delaying of ageing.
   e). Health education for sports persons.

2. Scientific promotion of games and sports-
   a). Planning of training programs.
   b).Evaluation of training programs.
   c).Injury prevention.
   d). Psychological counseling and guidance.

3. Sports Medical services-

   Sports medicine services may also be extended to -- prevention of obesity, cardiac illness, cardiac rehabilitation, prevention and control of diabetes.

Aim / Goal of sports medicine:-

The goal / aim of sports medicine is to maintain, sustain, and at times to regain peak physical fitness i.e adaptability to stress---- physical and mental.

Functions of Sports medicine:-

Main functions of sports medicine are promotive, educative, formative, recreative, competitive, therapeutic and rehabilitative in nature.

UNIT- II

2. Explain in detail the reason for drug use in sports and how the use can be discouraged.

The reason for drug use in sports are:-

PHYSIOLOGICAL REASONS

#. Increase oxygen transport
#. Lose weight, train harder
#. To build muscle, increase energy
#. Mask injury and reduce tiredness
#. To quickly recover from injury
#. Natural ability not good enough

PSYCHOLOGICAL REASONS

#. To increase motivation
#. To steady nerves
#. To increase aggression
#. Making most of a in the short sporting life.

SOCIAL REASONS

#. They are prepared to win at all costs
#. Pressure to win from coaches
#. Peers and the media
#. By winning they can earn big money
#. Belief that everyone else is doing it
#. Fear of not winning
#. To meet the expectations of others

How the use of drugs can be discouraged.

#. Stricter, more rigorous and out of season testing
#. Stricter punishments and life bans
#. Co-ordinated education programmes for athletes and coaches which highlight the health and moral issues surrounding drugs and sport
#. More money for increasingly efficient and effective testing programmes
#. Unified policies about the issue
#. Role models to reinforce their 'no drugs' position

OR/

Explain the types of malnutrition and their causes in detail.

There are basically four forms of malnutrition:-

1. Under nutrition ii). Over nutrition iii). Imbalance iv). Specific deficiency

Under Nutrition:- This is the condition when an insufficient amount of food is consumed over an extended period of time. In extreme cases it is called as starvation.

Over Nutrition:- This is the pathological state resulting from the consumption of excessive quantity of food over an extended period of time. The high incidence of obesity and diabetes attribute to over nutrition in the western world.

Imbalance :- This is the pathological state resulting from a disproportion among essential nutrients with or without absolute deficiency of any nutrient.

Specific deficiency **:-** It is the pathological state resulting from a relative or absolute lack of an individual nutrient.

Causes of Malnutrition:-

1. Poverty,
2. Ignorance--- Low fat diets, No Immunization
3. Child abuse
4. Cultural and social practices , child rearing patterns,
5. Maternal malnutrition, prematurity, Infectious disease
6. Infectious disease-----Diarrhea, Aids, TB, measles, whooping cough, Intestinal Parasites etc.
7. Poor Environmental conditions and Unsanitary living conditions
8.Poor quality drinking water
9. Climatic conditions -- Droughts, floods Agricultural/cultural patterns
10. Agricultural/cultural patterns ,cooking & storage patterns, wars, forced migrations.
11. Health and emergency care services—Nutritional surveillance, Nutritional Rehabilitations, Nutritional supplements, Health Education.
12. Food Adulteration.

UNIT- III

3.. **Explain the role of climatic conditions with examples on sporting performance**.

Climate, weather, and the environmental conditions in reference to sports, includes the temperature, the humidity, wind, rainfall, cloud cover, barometric pressure, light/visibility etc. or any outdoor or indoor condition that potentially impacts on performance. The environment will include prevailing weather conditions, the physical nature of the venue, such as topography or altitude, as well as man-made factors such as pollution, traffic that impacts on events such as cycling, or noise, such as stadium noise.The ability of an athlete to overcome environmental conditions is closely tied to the training concept of acclimatization, which requires a focused training approach concerning a specific condition that an athlete expects to face in an upcoming competition or event. Acclimatization is rooted in the inherent ability of the human body to adapt to its surroundings over time in all circumstances. Environmental conditions involve one or more different circumstances, as a condition to be faced in regular training or as an anticipated condition that will be encountered at a future time. There are general training principles to be employed to compensate or to overcome each of these environmental conditions; some factors are present in only certain types of sports and therefore demand specialized approaches to their resolution. Environmental conditions include warm weather, cold weather, high altitude, rugged topography, manmade impacts on air quality, wind speed, rain, time zone changes, indoor atmospheric conditions, and crowd noise.

Warm weather, which is often accompanied by high humidity, is likely the most common adverse environmental factor encountered by athletes. Warm weather and humidity are also readily adapted to through a gradual introduction of the body to the unaccustomed heat, through both day-to-day living in the warmer conditions as well as training. Most heat acclimatization programs suggest training at approximately 50% capacity for the first four to seven days of the program. Most athletes will achieve 75% heat acclimatization within 10 days of commencement, with 100% tolerance within 21 days. All heat training requires a careful attention to hydration, the average adult requires a minimum of one litre of fluid replacement per hour in temperatures that exceeds 24°C (75°F); heat and humidity increases the body's production of sweat leading to dehydrate the body.

Cold weather, High altitude, Hilly or rugged topography for runners and cyclists, Wind speed, Rain, Time zone changes, Indoor atmospheric conditions, Crowd noise are also the important factors which influences the performances in the sporting arena.

OR/

Explain the mechanism and importance of thermoregulation system in our body.

Thermoregulation refers to the mechanisms and control systems used by the body to balance thermal inputs and thermal losses so as to maintain its core temperature nearly constant.

It is the ability of an organism to keep its body temperature within certain boundaries, even when the surrounding temperature is very different. This process is one aspect of homeostasis : a dynamic state of stability between an animal's internal environment and its *external* environment.

In a healthy individual, the temperature of the core of the body is regulated by feedback control mechanisms that maintain it nearly constant around 37°C 98.6°F (98.6°F) throughout the day, week, month or year. This thermoregulation is efficiently coordinated by the central nervous system (CNS) as long as the temperature of the surroundings ranges between 20°C (68°F) and 54°C (130°F).

Thermoregulation in organisms runs along a spectrum from endothermy to ectothermy. Endotherms create most of their heat via metabolic processes, and are also referred to as warm-blooded. Ectotherms use external sources of temperature to regulate their body temperatures. They are also referred to as cold-blooded.

In other words, cold-blooded animals are those whose body temperatures are regulated by their environment, and warm-blooded animals are those whose body temperatures are kept relatively constant by internal mechanisms. Along with the way their body temperatures vary, another main difference between these types of animals is that warm-blooded animals require more food.

The vast majority of mammals and birds are warm-blooded, and almost all reptiles, fish, insects, and amphibians are cold-blooded. There are some exceptions, however, and some animals that have characteristics of both types. For example, bats and mole rats are mammals, but their body temperatures can vary according to their environments, especially when they are not active. Certain insects, such as hawk moths and some bees, can raise their body temperatures by beating their wings. Some fish have internal mechanisms that help keep their brains and eyes from becoming too cold, which might impair their function.

The body increases and lowers its core temperature using a temperature control system that works like a thermostat. Increased body temperature activates mechanisms promoting heat loss, and lowered body temperature activates mechanisms enabling the accumulation or production of heat. Such a system is called a feedback control system,

A feedback system has three components: sensors that register the change, a control centre that receives the signals of the sensors, and an effector mechanism, meaning a pathway for the commands of the control centre when it responds to the information received from the sensors.

There are three main effector mechanisms involved in thermoregulation.

1. The first is the vaso-motor system, which consists of the nerves that act on blood vessel diameter; The vasomotor system is responsible for two physiological responses called vasodilation and vasoconstriction. The first increases blood flow in the tissues and the second decreases it.
2. The second is provided by metabolic effectors, which are substances produced by the body to increase its activity.
3. The third main effector mechanism is provided by the sweat glands.

<u>When the surroundings are hot or when the body is vigorously exercising</u>:

- The body core temperature starts to rise.
- This increase in temperature is detected by heat sensors in the body.
- These sensors send signals to the CNS.
- The CNS stimulates the sweat glands.
- This increases the production of sweat.
- And this activates the evaporation of sweat.
- Which promotes heat loss by evaporation.
- The CNS also signals the vasomotor system to dilate the capillaries underlying the skin.
- Vasodilation occurs and the capillaries become larger.
- More blood flows underneath the skin surface.
- Which promotes heat loss by conduction, radiation, and convection.
- The body core temperature returns to normal.

<u>When the surroundings are cold or when the body is resting</u>:

- The body core temperature starts to drop.
- This is detected by cold sensors in the body.
- These sensors send signals to the CNS.
- The CNS slows down the activity of the sweat glands.
- This lowers the production of sweat.
- And it decreases the evaporation of sweat.
- Which reduces heat loss by evaporation.
- The CNS also signals the vasomotor system to constrict the capillaries underlying the skin.
- Vasoconstriction occurs and the capillaries become narrower.
- Less blood flows underneath the skin surface.

- This reduces heat loss by conduction, radiation, and convection.
- The body core temperature returns to normal.

UNIT- IV

4. **How the WHO defined health and its various dimensions**.
   The World Health Organization (WHO) defined health in its constitution as "a state of complete physical, mental, social and occupational well-being and not merely the absence of disease or infirmity".
   Various dimensions of Health are:-
   i). Physical Health.
   ii). Mental Health
   iii). Social Health.
   iv). Emotional Health.
   v). Spiritual health.
   vi). Occupational health.

OR/

What do you mean by fitness, how it can be achieved by an individual.

Physical fitness mean the ability (suitableness) of your body to perform a given activity. This spans the range from bending down to tie your shoes to being able to climb Mt. Everest. OR it is the ability of an individual to perform the expected task without any undue fatigue and have ample energy with him/her to enjoy the leisure time.

There are different levels of fitness just as there are different levels of health. A common perception brings to mind a picture of a body builder or a professional athlete. While those guys are definitely at a very high level of physical ability that's needed to perform those specific activities or sports, there are other levels too. The base level, the mid-level and the top level.

The basic ways of achieving physical fitness are:-

i). Taking proper diet and nutrition.

ii). Regular physical exercises.

iii). Proper rest and sleep.

iv). Smartly handling the daily life stress

v). Following a disciplined life style.

vi). Inculcating good life habits.

vii). Keeping away from drugs, alcohol, smoking etc.

viii). Developing social relationships etc.

UNIT- V

5. **How exercise act as an instrument of rehabilitation for those suffering from health disorders.**

The exercise in various forms and in special designs are now available for the rehabilitation, prevention and treatment of a lot many diseases and disorders, and the examples are as follows:-

i). For healthy lifestyle.

ii).For the prevention, treatment and rehabilitation of diabetes.

iii). For maintaining healthy weight, controlling weight and reducing weight.

iv). For the prevention and treatment of Hypertension.

v). For the prevention and treatment of High Blood pressure.

vi). Prevention, treatment and rehabilitation of cardiac diseases.

vii). For the treatment and rehabilitation of anxiety and other mental disorders.

viii). For the rehabilitation of arthritis problems.

ix). For the rehabilitation of drug addicts.

x). For the rehabilitation of mentally challenged and criminals.

OR/

Explain the meaning and importance of adapted physical education.

Adapted Physical Education (APE) is the art and science of developing, implementing, and monitoring a carefully designed physical education instructional program for a learner with a disability, based on a comprehensive assessment, to give the learner the skills necessary for a lifetime of rich leisure, recreation, and sport experiences to enhance physical fitness and wellness.

Importance of Adapted Physical Education :-

i). To provide equal opportunity to the challenged and special children.

ii). To provide the basic skills.

iii). To provide them recreational facilities.

iv). To provide them job opportunities.

v). For outlining individualized needs.

vi). For establishing an appropriate educational placement

vii). To creates an opportunity for teachers, parents, school administrators, related services personnel and students (when appropriate) to work together to improve educational results for learners with disabilities.