Physical Education

Pre Ph.D Entrance Examination Syllabus

UNIT – I

Hydrotherapy and Balaneotherapy – physiological effects – preventive use – methods of application – contrast bath, whirlpool, cryotherapy, cryokineties, electrotherapy – ultrasonic therapy – indication and contra indications.

Definition – meaning of sports physiotherapy – need and importance of sports physiotherapy – need and importance of sports rehabilitation – need and importance of sports medicine (preventive curative and rehabilitative aspects). Athletic Injuries – causes – preventive measures – passive treatments – massage – historical developments – effects of massage – basic massage technique – (Swedish system) – special massage techniques – yoga therapy and sports injuries.

UNIT – II

Energy – definition – the biological energy cycle – ATP, the aerobic and anaerobic systems during rest and work – recovery from exercise; the recovery oxygen replenishment of energy stores during recovery – removal of lactic acid from blood and muscle – restoration oxygen stores.

Measurement of energy work and power: Direct measurement of energy, indirect measurement of energy-the caloric equivalent of oxygen-measurement of energy-cost of exercise-other methods of reflecting energy cost (bicycle ergo meter, treadmill, run test)

Pulmonary ventilation: At rest, during exercise the anaerobic threshold, alveolar ventilation and dead space, lung volume and capacities, dynamic lung measures, second wind, stitch in the side, ventilation mechanics.

UNIT – III

Movement patterns-the essence of sports biomechanics-defining human movements-some fundamental movements-movement patterns-comparison of qualitative movement analysis.

Concept of application of mechanics in sports-static and dynamic balance (Equilibrium)-force-moment of force-centripetal and centrifugal forces-force of gravity-spin and friction-impact-elasticity-levers-Newton's laws of motion-velocity and acceleration-types of motion-rotary and linear motion-angular kinetics-linear kinematism-centre of gravity-falling bodies-path of projection-work-power and energy, guiding principles derived from the application of above mechanical concepts.

UNIT – IV

Learning by connections associations – implications of learning principles – learning process and its factors – characteristics of sport learning – motor learning and co-ordination-anxiety and sports performance-pressure of the coach-measures to control anxiety of the players.

Improving the quality of coach – parent relationship in Youth sport – communication in sport.

Cognitive strategies in sport – imagery in sport – cognitive behavioural principles and techniques – cognitive behavioural intervention program's using imagery and relaxation – goal setting – psychological skills training for sport.

UNIT – V

A) Basic level: own body exercise, circuit training, sand training, hill training, stair case training, jump rope training, fartlek training, weight training, plyometric training
B) Advanced level: Saq training(speed, agility, quickness) cross training complex training, contrast training, tetanus training, maxex training
C) Training components: Density, load, set, recovery.

A) Types single periodisation, double periodisation, multiple periodisation
B) Cycles-micro cycle, meso cycle, macro cycle.
C) Phases-preparatory phase, competition phase, transition phase, detraining

Meaning of yoga – concept of yoga – aim and objectives of yoga – brief history of yoga – systems of yoga: Bhakthi yoga – jnana yoga – karma yoga – hatha yoga – laya yoga – mantra yoga – kundalini yoga – raja yoga – patanjali yoga; eight limbs of yoga: yama – niyama – asana **– pranayama – pratyahara – dharana – dhayana – samathi**

Concept of pranayama – nadis – ida nadi – pingala nadi – sushumma nadi – controlling of breath; puraka – kumbhaka – rechaka. Benefits of pranayama on various systems of the body. Types of pranayama – nadi suddhi – nadi shodhanas – surya bhedana – kapalabhati – bhastrika – sitakari – sitali – bhramari – ujjayi.