

Physical Education

Pre Ph.D Entrance Examination Syllabus

UNIT – I

Hydrotherapy and Balneotherapy – physiological effects – preventive use – methods of application – contrast bath, whirlpool, cryotherapy, cryokinetics, 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 kinematics-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.

References:

AAHPER publication (1974): profession preparation in safety education and school health education, Washington.

Armstrong and Tucket (1964) "Injuries and Sports" London sample press.

Astrand, P.U. and K.Rodhal (1986) Text book of work physiology, new York McGraw Hill

Berger (1982) applied exercise physiology: lea and febiger: Philadelphia

David H Clarke, "Exercise Physiology" prentice hall inc., Englewood cliffs, new jersey.

Broer.M.R. "Efficiency of human movement Philadelphia": W.S.Saunders company

Bunn, John W, "Scientific principles of coaching" Englewood cliffs, new jersey, prentice hall inc.

Richard H.S. Cox-"Sports psychological" WCB McGraw hill, of Missouri, new York

Clifford T.Morgan, Richard A.king, John R. Wish and John Schopler, "Introduction to psychology" TATA McGraw hill-new delhi, university of north carolina.

Dick, frank W.(1980) sports training principles, London : Lepus books

Fox, Edward L(1984) sports physiology Halt: CBS college publishing

International fitness association web at <http://www.ifafitness.com>

Chandrasekaran, K. Sound health through yoga. Madurai; Prem kalyan publications.

Gharofe, M.L; applied yoga. Lonavala

Gharota, science of yoga, kaivalayadhama, lonavla, India.