

## **NATIONAL CENTRE OF SPORTS SCIENCES AND RESEARCH (NCSSR)**

The scheme of National Centre of Sports Sciences and Research (NCSSR) aims to support high level research, education and innovation with respect to high performance of elite athletes. The scheme has two components: One is setting up of NCSSR and other is focused on creation of support to Sports Sciences Departments in Six Universities and Sports Medicine Departments in Six Medical Colleges/ Institutes/ Hospitals.

### **Vision:**

To position NCSSR as a globally renowned Sport Science and Sports Medicine Institute with exceptional research and service delivery competency focusing on Olympic excellence of Indian Athletes

The aims and objectives of NCSSR are as follows:

1. Application of scientific principles to the promotion, maintenance and enhancement of sporting performance.
2. Developing athletes to their maximum potential and to prolong their competitive sporting career.
3. Dissemination of sports science information
4. Testing and Certification of food supplements/Indigenous preparations.
5. Application of Ayurvedic /Homeopathic Medicines in sporting performance.
6. Management and rehabilitation of sports injuries.

As per the scheme, selection of the Universities/Institutes/Medical Colleges/Hospitals is based on the fulfilment of the eligibility criteria of the Scheme, not on the basis of state. However, one University has been selected from West Bengal namely University of Calcutta, Kolkata for setting up of Department of Sports Science under NCSSR Scheme, Ministry of Youth Affairs & Sports (MYAS).

A statement of funds released for setting up of NCSSR and for 6 Universities/Institutes and 6 Medical Colleges/ Institutes/ Hospitals selected in different parts of the country for setting up Departments of Sports Science and Sports Medicine therein.

The NCSSR strives to become a brand synonymous with scientific research in sports and could eventually contribute immensely towards development of evidence-based studies which propagate the importance of sports and exercise in humans across all age-groups and levels of participation, thus expanding its contribution to Indian sports and fitness ecosystem beyond elite athlete training support.

The NCSSR is a continuing scheme which was initially approved by Standing Finance Committee (SFC) on 23.10.2017 for implementation from FY 2017-18 to 2019-20, to support high level research & education and innovation in sports science with an outlay of INR 344 Cr.

A review of the NCSSR scheme was undertaken by SFC on 19.03.2020 and the broad objectives were retained with some minor modifications and the outlay was reduced to INR 260 Cr with an extension of duration up to 2025-2026.

**Aims and Objectives of Educational Institutions funded under NCSSR Scheme:**

1. To start M.Sc (Sports Sciences) in 6 selected Universities and MD and DSM in Sports Medicine in 6 Medical Colleges.
2. Performance enhancement of athletes through the use of Sports Science and Medicine.
3. Scientific support to sportspersons and Rehabilitation of Sports injuries to Sports person.
4. Basic and applied research in Sports Science and Sports Medicine.
5. It will help in increasing the trained manpower experts in Sports Sciences and Sports Medicine and will, in turn, reduce the dependency of the foreign experts.

The total cost of the proposed scheme would be Rs.107.00 crore for NCSSR and Rs.237.00 crore for support to Sports Sciences and Sports Medicine Departments in selected Universities and Medical Colleges.

**List of Universities/Institutions selected for funding to support Sports Sciences department**

S.No	Institute /medical college/university	Academic Programs to beconducted
1.	National Institute of Nutrition, Hyderabad	M.Sc Sports Nutrition
2.	Lakshmibai National Institute of Physical Education, Gwalior	M.Sc (Exercise Physiology) M.Sc(Sports Biomechanics)

3.	Guru Nanak Dev University, Amritsar	M.A.(Sports Psychology) M.Sc. (Sports Biochemistry) M.Sc. (Sports Nutrition) M.Sc. (Sports Physiology) M.A. (Sports Psychology) M.P.T. (Sports Physiotherapy) Certificate(Sports Anthropometry)
4.	Central University of Rajasthan, Ajmer	M.Sc In Sports Biochemistry M.Sc In Sports Physiology M.Sc In Sports Nutrition M.Sc In Sports Biomechanics M.A. In Sports Psychology
5.	University of Calcutta, Calcutta	M.Sc Sports Physiology M.Sc In Sports Biochemistry M.Sc In Sports Nutrition Sports Physiotherapy
6.	Annamalai University, Annamalai	M.Sc In Sports Biochemistry M.Sc In Sports Physiology M.Sc In Sports Nutrition M.Sc In Sports Biomechanics M.A. In Sports Psychology Sports Physiotherapy <b>Certificate In Sports Anthropometry</b>

List of Universities/Hospitals/Medical Colleges selected for funding to support Sports Medicine department

S. No	Medical College/University	Courses
1	Vardhman Mahavir Medical College & Safdarjung Hospital, New Delhi	MD in Sports Medicine form Diploma in sports medicine
2	King George's Medical University, Lucknow	MD in Sports Medicine Diploma in sports medicine
3	Pandit Bhagwat Dayal Sharma University of Health Sciences, Rohtak	MD in Sports Medicine Diploma in sports medicine
4	Bangalore Medical College, Bangalore	MD in Sports Medicine Diploma in sports medicine

**NCSSR with its network:**

NCSSR has a big network all over the India. Head office os NCSSR is mainly based on IG Stadium complex, New Delhi-110002, is now working with its all branches, i.e. 22no. NCoEs and all SAI training centres to cater athletes all over India. A map view of the same is given bellow:

## NCSSR and its Spokes as per SFC

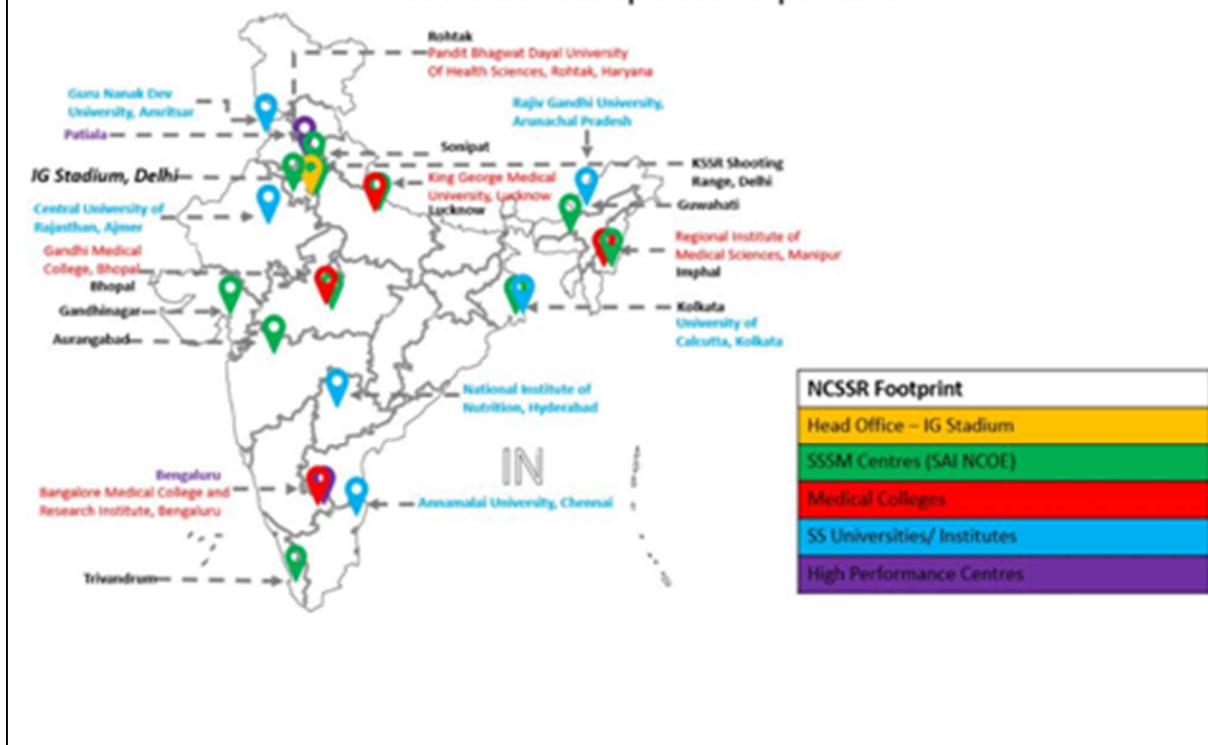


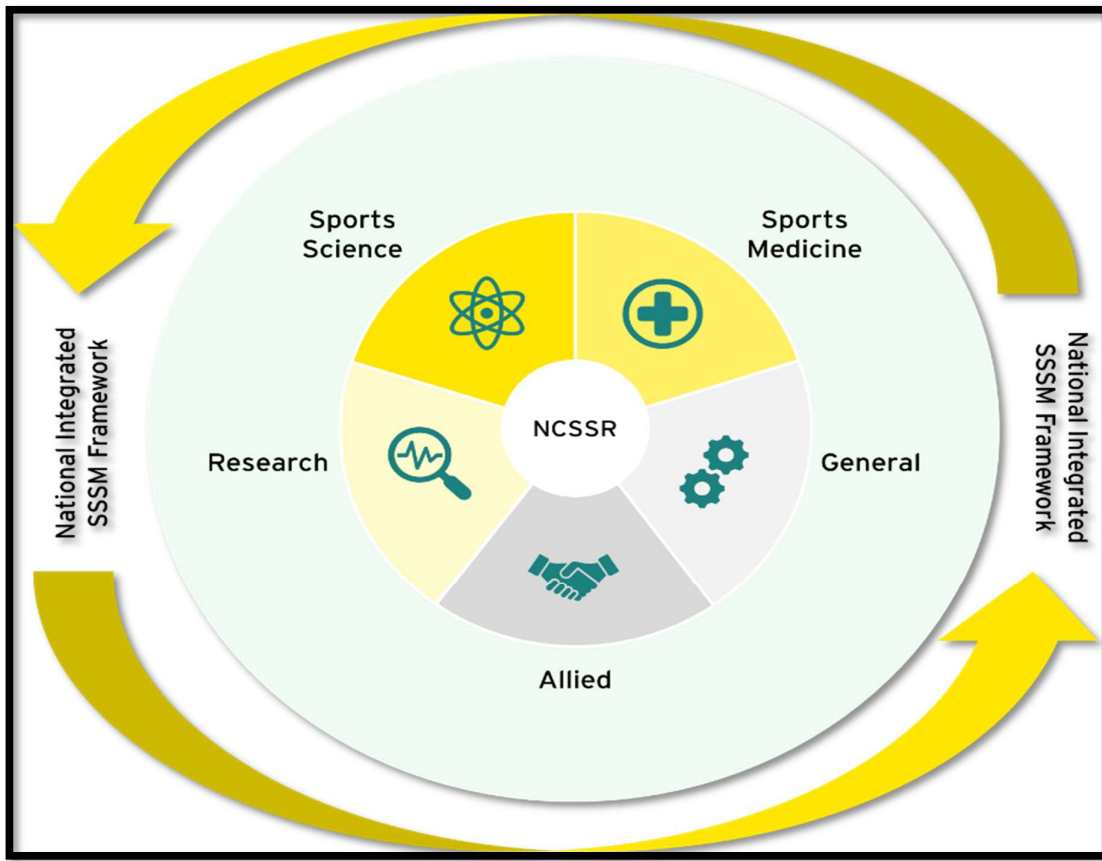
Fig: NCSSR foot print (India)

### Main objective –

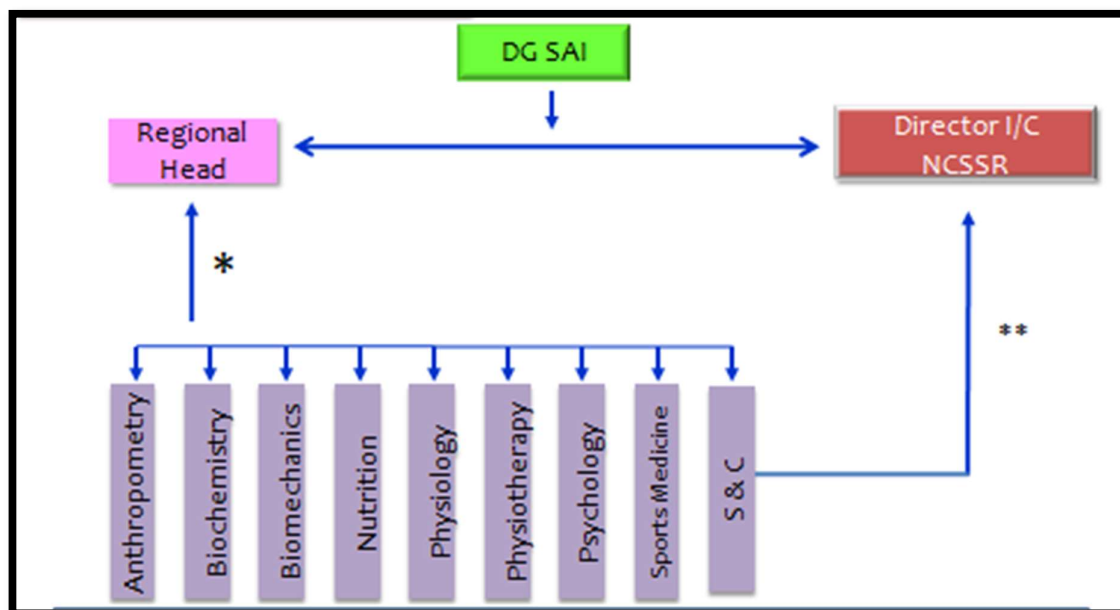
Develop a National Integrated Sports Science & Sports Medicine (SSSM) Framework based on which state-of-the-art services in SSSM shall be provided to athletes.

Predominantly provide services across the following key areas –

1. *Sports Science*
2. *Sports Medicine*
3. *Research focused on Sports Science And Sports Medicine*



NCSSR network and work distribution



Departments of NCSSR (IGSC, Delhi, 110002)

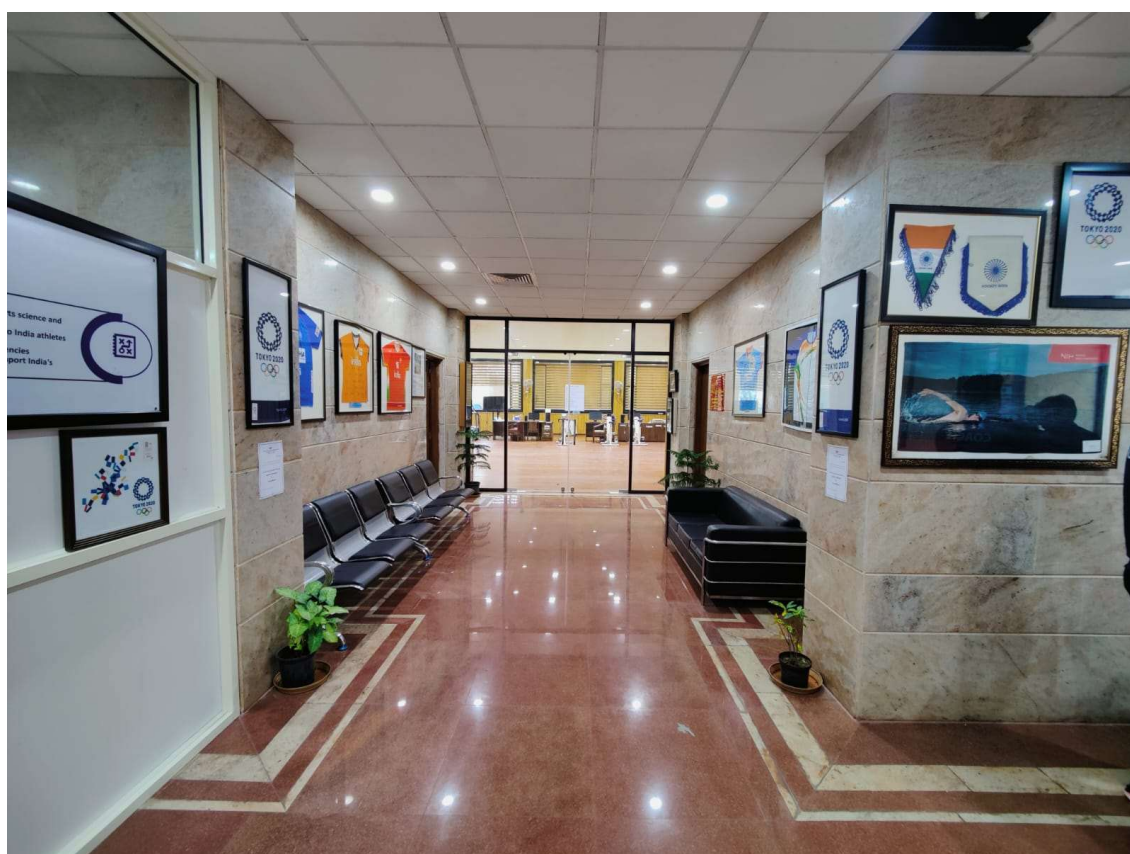


PHOTO: NCSSR LAB



PHOTO: PHYSIOLOGICAL ASSESSMENT OF A RIDER (AT NCSSR LAB)



PHOTO: AFTER ASSESMENT OF OLYMPIAN LOVLINA (AT PHYSIOLOGY DEPT. NCSSR)





PHOTO: VO<sub>2</sub>max TESTING AT NCSSR LAB (PHYSIOLOGY)



PHOTO : A PART OF PHYSIOTHERAPY DEPARTMENT (NCSSR)



PHOTO: ASSESMENT ON FILED (BY NCSSR)

## **DEPARTMENTS:**

### **Anthropometry:**

Anthropometry is the science of measuring the size, shape, and proportion of the human body. Sports Anthropometry/ Kin-anthropometry refer to dynamic relationship and quantitative interface between human structure and function. Anthropometry plays an important role in determining athletes' performances and may also help the coaches select athletes for team events. Anthropometric measurements of body size, structure, and composition has revealed correlation between body structure, physical characteristics and sport capabilities.

### **KEY AREAS:**

- Anthropometric profiling of various sports
- Growth, Maturation and Performance
- (Impact on talent identification and development program)
- Body Composition Assessment

- (Effect of training, conditioning and nutrition)
- Evaluation of Physique and Somatotype
- (Demands for Sports activities)

### **Sports Biochemistry**

Main Objective:

Providing Scientific support for athletes from different schemes of SAI such as NCOE, National Cmaps, Kelo India, and TOPS by conducting biochemical evaluation.

Key Areas: Assessment /Diagnosis of

- Nutritional deficiencies
- Muscle damage markers
- Overtraining
- Bone health Markers
- Hematological parameters
- Organ function tests
- Dehydration and inflammation

### **Biomechanics**

Sports Biomechanics deals with the Force and Motion parameters of Athletes. The Main Goal of Biomechanics is to improve performance and reduce injury by means of optimising movement patterns. As the name Suggests, Biomechanics studies the Biology of an Athlete by applying laws of Mechanics or Physics while performing the sporting activity. To understand performance and injury, Biomechanists assess the movements/motion and forces produced by the athlete. Quantifying and understanding movement can help to diagnose problems which might limit Sports Performance or put an athlete on long term injury risk.

About the Department

The department of Sports Nutrition formerly known as the department of nutrition is 4 decade old department in Sports Authority of India rendering nutrition support to sportspersons cutting across sports and level of sports activity. Today, the essence of providing nutritional support continues in a multidimensional approach. The department has two wings namely – Sports Nutrition & Dietetics and Food Service Management dealing with general health, healthy eating, recovery, and performance.

The department works together with coaches, sports scientists, and other support mechanism to provide best possible nutrition services.

### **Nutrition**

Support athletes to obtain optimal gains from the training program: The department supports athletes to consume appropriate nutrients to fuel their training and recovery, allowing them to perform at their best during workouts and events.

Enhance recovery between workouts and events: The department develops nutrition plans that help athletes recover quickly between workouts and events..

Achieve and maintain an ideal body weight and physique: The department helps athletes achieve and maintain an ideal body weight and body composition through proper nutrition, which can improve athletic performance.

Reduce the risk of injury and illness: The department provides athletes with right nutrition advice to support immune function and reduce the risk of illness and injury.

Build confidence in being well-prepared to face competition: The department works with athletes to develop a nutrition plan that optimizes performance and recovery, which can help build confidence in their ability to compete at a high level.

Assist in achieving high-level competition performances consistently: The department would provide athletes with proper nutrition to fuel their bodies and optimize their performance during competition, helping them achieve high-level performances consistently.

Provide a healthy and enjoyable eating environment: The department would promote a healthy and enjoyable eating environment by providing nutritious and tasty food options that meet the athlete's specific needs and preferences

## **Sports Physiology**

Sports Physiology is the branch of Sports Science that helps to understand the physiological demands of a sporting performance, which gives an insight as to what characteristics an athlete should have to be successful competing at the highest level.

### Department of Physiology – Objectives

- To enhance the performance of national level sportsperson through scientific assessment and evaluation.
- To provide scientific inputs to Indian National Players and Coaches as well as players under Pay Play Scheme or Daily Coaching Scheme to formulate scientific and systematic training program.
- To identify and nurture sports talent of various age group
- To monitor the growth and development, performance and training of talented children
- To orient the coaches about the modern trends and methods of scientific training in various sports and games.
- To take up research projects (Applied/Basic) in the field of sports to enhance the performance.

## **Sports Physiotherapy**

### Objective

- On field injury management
- Protective taping
- On field warm up/cool down/ sports specific exercises
- On field correcting movement dysfunctions/postures/limitations
- Injury assessment- history/ cause/movement dysfunction
- Injury management- rehab modalities based
- Injury management- rehab exercise based
- Manual therapy
- Cryo chamber
- Game ready
- Compression garments
- Form roller
- Pre participation evaluation (sports wise)

- Injury prevention- movement assessment( rom, strength)/ target (goal )
- Associated exercises.

### **Sport Psychology**

The Department of Sport Psychology has established itself as an important link in an athlete's development and in his journey for achieving peak performance. With the athlete's mental wellbeing kept on the forefront, the Department is dedicated to serving the nation by making mental health accessible for all sportspersons.

Sports psychology helps the athlete by way of psychology profile (in terms of both abilities and personality). Identifying areas of concern for intervention

- Identifies opportunities for improvement and performance development customized interventions.
- Helps to use their potential to the full and perform as well as they possibly can.

### **Strength & Conditioning**

Strength & Conditioning Physical training to improve sport specific physical performance of athlete. Selection and implementation of exercise techniques in view of it. Eg. resistance exercise.

Components worked on:

- Improving body composition based on demands of sport eg. Reducing fat percentage or Increasing lean body mass.
- Improving Agility, Balance Co-ordination, Strength, Power & Endurance
- Improve motor control.
- Reducing injury risk.
- Return to sport training.