CENTRAL UNIVERSITY OF RAJASTHAN

Department of Sports Biosciences

e-prospectus

2020-2021

VISION

The School of Sports Sciences was established in May 2018 with the support of the Ministry of Youth Affairs and Sports, Govt. of India. The School of Sports Sciences aims to carry out active teaching and research in the various fields of Sports Sciences. The Master programs of this school would enhance the knowledge of the students in sports sciences and improve their level of understanding with underlying scientific principles in sports sciences. The courses would emphasize on both theoretical and laboratory aspects which would help the students to enrich and sharpen their knowledge both in instrumentation techniques and software-based simulations in sports sciences.

We encourage and guide our students to study scientific principles related to sports performance through a broad range of scientific fields including Physiology, Nutrition and Biochemistry. Our courses also help students develop numerous useful skills such as designing research studies, collecting data and information, critical data analysis, dissecting results, problem solving, organization and time management. Keeping in mind the career ambitions of the students, our school also provides ample opportunities to students to learn novel state of the art technologies in multiple scientific research areas which will give them an extra edge in their sports science careers. We are confident that our well-planned curriculum, guidance, dedicated faculty and remarkable leadership will bring out the best in our students and enrich them with the finest sports science expertise

FACULTY PROFILE

Dr. Chandra Sekhar Gahan
Associate Professor and Head
M.Sc. Applied & Industrial Microbiology, Utkal Univ. Odisha; Lic.Tech. Engg. Proc. Metall. LTU; Ph.D. Engg. Proc. Metallurgy, LTU Sweden; Post Doc. UCT South Africa; Scientist KIGAM South Korea; Asst. Prof. SRM Univ. Chennai; Marie Curie Fellow SDU Turkey
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Dr. Sunil G Purohit
Assistant Professor
Ph.D. Sports Science. M.Phil. Biochemistry, M.Sc. Biochemistry, Diploma in Sports Coaching, Sports Authority of India, National Institute
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Dr. Neha Singh
Assistant Professor
Post-doctoral fellow, Icahn School of Medicine at Mount Sinai, New York, USA • PhD. Biomedical Sciences (Catholic University of Leuven, Belgium) • M.Sc. Biochemistry, Jiwaji University, Gwalior, India
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Dr. Nisha
Assistant Professor
M.Sc. Food and Nutrition, Kerala Agricultural University, Thrissur, Ph.D. Food and Nutrition, MPUAT Udaipur, ICAR – JRF and SRF, UGC – NET – JRF
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Dr. Hemanth Naick Banavath
Assistant Professor
Ph.D. Biochemistry & Molecular Biology, Pondicherry University, Puducherry. • Research Trainee – Division of Cardiovascular Pathology, Johns Hopkins University, Baltimore, USA. • Post-Doctoral Research Fellow – Division of Biology
hemanth.naick@curaj.ac.in

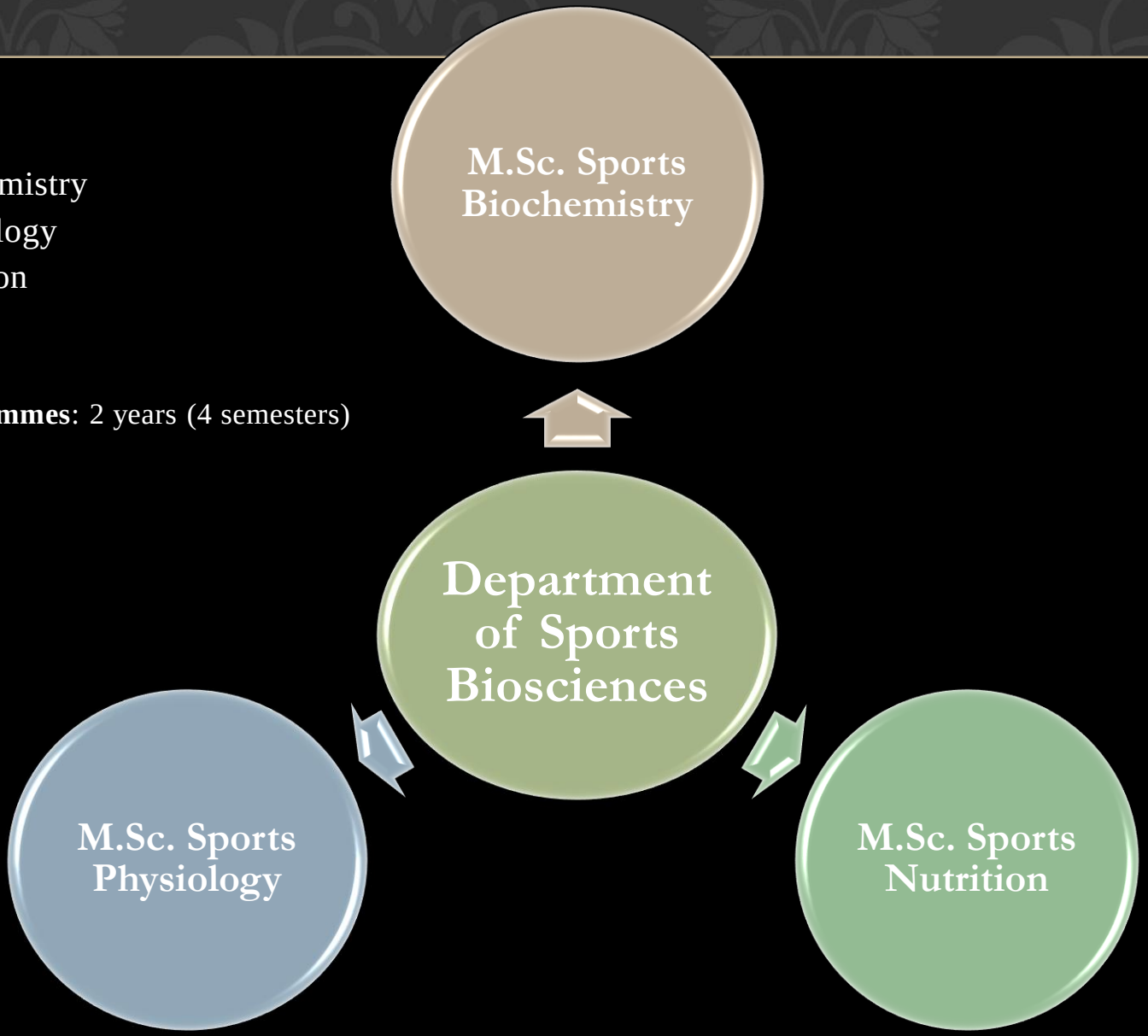
DEPARTMENT OF SPORTS BIO-SCIENCES

Central University of Rajasthan has started Department of Sports Biosciences under the School of Sports Sciences MYAS-CURAJ supported by the Ministry of Youth Affairs and Sports (MYAS). The department runs three M.Sc. programs: M.Sc. Sports Physiology, M.Sc. Sports Biochemistry and M.Sc. Sports Nutrition. These courses would enhance the knowledge of the students in Sports Biosciences and improve their level of understanding with underlying biological scientific principles in sports sciences. The courses would emphasize on both theoretical and laboratory aspects and most specifically the biochemical and nutritional analysis together with computational simulation. The program would also allow students to interact and carry out their practical tests both on the field with the athletes/sports persons during the games and sports. This would allow the students to enrich and sharpen their knowledge both in instrumentation techniques and software for understanding the underlying intricacies of sports activities and improvisation of the games/sports. Appealing to those with an enthusiasm for biosciences of sports, physical activity and human biology, these courses would teach how sporting performance can be improved to ensure individual level success and achieve improvisation in the potential of sports persons

PROGRAMMES OFFERED BY THE DEPARTMENT

- M. Sc. Sports Biochemistry
- M. Sc. Sports Physiology
- M. Sc. Sports Nutrition

- **Duration of the programmes**: 2 years (4 semesters)



M. SC. SPORTS BIOCHEMISTRY

- **Approved Intake:** 15 Students

- **Minimum Eligibility for entry:** Bachelors' Degree in Biochemistry/Life Sciences/ any other branch of Science/or any other examination recognized equivalent there to or higher degree, any Medical (MBBS, BDS, BAMS) BPT/Allied Medical Sciences degree with 50% marks or equivalent grade in aggregate for General category and 45% or equivalent grade for SC/ST/OBC/PWD candidates and must have at least one course in Biology at 12th standard/ Intermediate level.

- **Course Structure :** Semester-wise, identifying Core courses, Discipline Electives, Extra-Departmental Electives, Practice/Lab/Workshop Courses

SEMESTER I			
Code	Title of Course	Type of Course	Credits
MSSB 101	Human Anatomy and Physiology	Core 1	4
MSSB 102	Biomolecules and Metabolism	Core 2	4
MSSB 103	Food and Nutrition	Core 3	4
MSSB 104	Introduction to biomechanics	Core 4	4
MSSB 105	Discipline Elective I	DE 1	4
MSSB 106	Practicum I	P 1	2
MSSB 107	Practicum II	P 2	2
MSSB 108	Fitness		1
MSSB 109	Societal		1
SEMESTER II			
MSSB 201	Kinesiology	Core 5	4
MSSB 202	Psychological and Social Aspects of Sports	Core 6	4
MSSB 203	Principles and methods of Sports Training	Core 7	4
MSSB 204	Discipline Elective II	DE 2	4
MSSB 205	Discipline Elective III	DE 3	4
MSSB 206	Practicum III	P 3	2
MSSB 207	Practicum IV	P 4	2
MSSB 208	Fitness		1
MSSB 209	Societal		1
SEMESTER III			
MSSB 301	Sports and Exercise Metabolism	Core 8	4
MSSB 302	Instrumentation & Analytical Technique	Core 9	4
MSSB 303	Discipline Elective IV	DE 4	4
MSSB 304	Discipline Elective V	DE 5	4
MSSB 305	Elective I	E 1	4
MSSB 306	Practicum V	P 5	2
MSSB 307	Practicum VI	P 6	2
MSSB 308	Fitness		1
MSSB 309	Societal		1
SEMESTER IV			
MSSB 401	Discipline Elective VI	DE 6	4
MSSB 402	Elective II	E 2	4
MSSB 403	Dissertation		16
MSSB 404	Fitness		1
MSSB 405	Societal		1
TOTAL CREDITS			96

LIST OF ELECTIVES

DISCIPLINE ELECTIVE COURSES		
Sl. No.	Title of Course	Credits
1.	Fatigue, Injuries and Rehabilitation	4
2.	Essentials of Sports	4
3.	Kinanthropometry	4
4.	Adaptations to Exercise and Training	4
5.	Research Methodology	4
6.	Drugs and Doping in sports	2
7.	Medical Biochemistry	2
8.	Genetics in Sports Performance	1
9.	Essentials of Molecular Biology	1
10.	Biochemical Aspects of Health in Sports	4
11.	Nutritional Biochemistry	4
12.	Endocrinology in Sports	4
13.	Immunology in Sports Training	4
14.	Statistics for Sports Science	4

M. SC. SPORTS NUTRITION

- **Approved Intake:** 15 Students

- **Minimum Eligibility for entry:** Bachelors' Degree in Nutrition/food and Nutrition/food technology/food sciences/Life Sciences/ any other branch of Science/or any other examination recognized equivalent there to or higher degree, any medical (MBBS, BDS, BAMS) BPT/Allied Medical Sciences degree with 50% marks or equivalent grade in aggregate for General category and 45% or equivalent grade for SC/ST/OBC/PWD candidates and must have at least one course in Biology at 12th standard/ Intermediate level.

- **Course Structure :** Semester-wise, identifying Core courses, Discipline Electives, Extra-Departmental Electives, Practice/Lab/Workshop Courses

SEMESTER I			
Code	Title of Course	Type of Course	Credits
MSSN 101	Human Anatomy and Physiology	Core 1	4
MSSN 102	Biomolecules and Metabolism	Core 2	4
MSSN 103	Food and Nutrition	Core 3	4
MSSN 104	Introduction to biomechanics	Core 4	4
MSSN 105	Discipline Elective I	DE 1	4
MSSN 106	Practicum I	P 1	2
MSSN 107	Practicum II	P 2	2
MSSN 108	Fitness		1
MSSN 109	Societal		1
SEMESTER II			
MSSN 201	Kinesiology	Core 5	4
MSSN 202	Psychological and Social Aspects of Sports	Core 6	4
MSSN 203	Principles and methods of Sports Training	Core 7	4
MSSN 204	Discipline Elective II	DE 2	4
MSSN 205	Discipline Elective III	DE 3	4
MSSN 206	Practicum III	P 3	2
MSSN 207	Practicum IV	P 4	2
MSSN 208	Fitness		1
MSSN 209	Societal		1
SEMESTER III			
MSSN 301	Dietary Supplements and Ergogenic Aids	Core 8	4
MSSN 302	Sports Specific Nutrition	Core 9	4
MSSN 303	Discipline Elective IV	DE 4	4
MSSN 304	Discipline Elective V	DE 5	4
MSSN 305	Elective I	E 1	4
MSSN 306	Practicum V	P 5	2
MSSN 307	Practicum VI	P 6	2
MSSN 308	Fitness		1
MSSN 309	Societal		1
SEMESTER IV			
MSSN 401	Discipline Elective VI	DE 6	4
MSSN 402	Elective II	E 2	4
MSSN 403	Dissertation		16
MSSN 404	Fitness		1
MSSN 405	Societal		1
TOTAL CREDITS			96

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DISCIPLINE ELECTIVE COURSES		
Sl. No.	Title of Course	Credits
1.	Fatigue, Injuries and Rehabilitation	4
2.	Essentials of Sports	4
3.	Kinanthropometry	4
4.	Health Fitness and Wellness	4
5.	Research Methodology	4
6.	Assessment of Health and Fitness of Athlete	4
7.	Nutrigenomics	4
8.	Food safety and Standardization	4
9.	Adaptations to Exercise and Training	4
10.	Therapeutic Sports Nutrition	4
11.	Food Psychology and counselling	4
12.	Nutritional Biochemistry	4
13.	Exercise Physiology	4
14.	Statistics for Sports Science	4

M. SC. SPORTS PHYSIOLOGY

- **Approved Intake:** 15 Students

- **Minimum Eligibility for entry:** Bachelors' Degree in Physiology/Life Sciences/ any other branch of Science/or any other examination recognized equivalent there to or higher degree, any medical (MBBS, BDS, BAMS) BPT/Allied Medical Sciences degree with 50% marks or equivalent grade in aggregate for General category and 45% or equivalent grade for SC/ST/OBC/PWD candidates and must have at least one course in Biology at 12th standard/ Intermediate level.

- **Course Structure :** Semester-wise, identifying Core courses, Discipline Electives, Extra-Departmental Electives, Practice/Lab/Workshop Courses

SEMESTER I			
Code	Title of Course	Type of Course	Credits
MSSP 101	Human Anatomy and Physiology	Core 1	4
MSSP 102	Biomolecules and Metabolism	Core 2	4
MSSP 103	Food and Nutrition	Core 3	4
MSSP 104	Introduction to biomechanics	Core 4	4
MSSP 105	Discipline Elective I	DE 1	4
MSSP 106	Practicum I	P 1	2
MSSP 107	Practicum II	P 2	2
MSSP 108	Fitness		1
MSSP 109	Societal		1
SEMESTER II			
MSSP 201	Kinesiology	Core 5	4
MSSP 202	Psychological and Social Aspects of Sports	Core 6	4
MSSP 203	Principles and methods of Sports Training	Core 7	4
MSSP 204	Discipline Elective II	DE 2	4
MSSP 205	Discipline Elective III	DE 3	4
MSSP 206	Practicum III	P 3	2
MSSP 207	Practicum IV	P 4	2
MSSP 208	Fitness		1
MSSP 209	Societal		1
SEMESTER III			
MSSP 301	Fatigue, Injuries and Rehabilitation	Core 8	4
MSSP 302	Physiological Support for Athletes	Core 9	4
MSSP 303	Discipline Elective IV	DE 4	4
MSSP 304	Discipline Elective V	DE 5	4
MSSP 305	Elective I	E 1	4
MSSP 306	Practicum V	P 5	2
MSSP 307	Practicum VI	P 6	2
MSSP 308	Fitness		1
MSSP 309	Societal		1
SEMESTER IV			
MSSP 401	Discipline Elective VI	DE 6	4
MSSP 402	Elective II	E 2	4
MSSP 403	Dissertation		16
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TOTAL CREDITS			96

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3.	Kinanthropometry	4
4.	Health Fitness and Wellness	4
5.	Research Methodology	4
6.	Adaptations to Exercise and Training	2
7.	Exercise and Environmental Physiology	2
8.	Performance Evaluation and Testing	1
9.	Sports Specific Nutrition	1
10.	Physiology of Sports and Exercise	4
11.	Sports Ergonomics	4
12.	Statistics for Sports Science	4
13.	Endocrinology in Sports	4

LABORATORY FACILITIES

The department is in the process of developing a well-equipped laboratory to carry out the practical/laboratory exercises in the area of Sports Physiology, Sports Biochemistry and Sports Nutrition together with Computational facility. The laboratory set up at the department would allow the students to enrich and sharpen their knowledge both in instrumentation techniques and software. The lab facilities at the Department of Sports Biosciences aim to expand further to cater the needs of the students in research. The current lab facilities include the assessment of the following:

EQUIPMENT'S PROCURED/FACILITY AVAILABLE

MAJOR EQUIPMENTS

- Portable Digital Electronic Body Weigh Scale
- Deep Freezer (-40°C)
- Semi-automatic Biochemistry Analyzer
- Electromyography (EMG) and nerve conduction velocity (NCV)
- Serological Water Bath
- Bench Top pH meter
- Hot plate and magnetic stirrer
- Fully Automatic Hematological Analyzer
- Spirometer (Portable)
- Refrigerator
- Hot air Oven
- Weighing Balance
- Table Top Vortex Mixer

MINOR EQUIPMENTS

- B.P. Instrument (Sphygmomanometer)
- Anthropometric Measuring Set
- Cardio Check Health Kit
- Digital Metronome
- Finger Pulse Oxymeter
- Skin Fold Calliper For Lab
- Stadiometer Digital
- Stethoscope Litman Type
- Wired Measuring Tape
- Cones
- Thera-Bands
- Gym Balls
- Skipping Ropes
- Chin-up bar
- Digital Glucometer
- Sit & Reach Box
- Steel Measuring Tape
- Skin Fold Calliper Portable
- Stadiometer Portable
- Stop Watch Digital
- Sit-ups Mats
- Ladders for Speed & Agility drill
- Resistance Training Loop/Band
- Medicine Balls
- Abdominal Wheel Roller
- Push-up bar
- Portable Spirometer

HUMAN BODY MODELS

- Human Brain
- Human Eye
- Ear With Pinna
- Heart
- Functional Hip Joint
- Functional Elbow Joint
- Imported Vertebral Column with Stand
- Imported Human Skeleton with stand
- Torso with Head and Interchangeable Male and Female Genitalia
- Kidney on Stand
- Liver showing Gall Bladder
- Functional Shoulder Joint
- Functional Wrist Joint
- Functional Ankle Joint
- Imported Functional Knee Joint (Right)
- Stomach on Stand

RESEARCH LAB

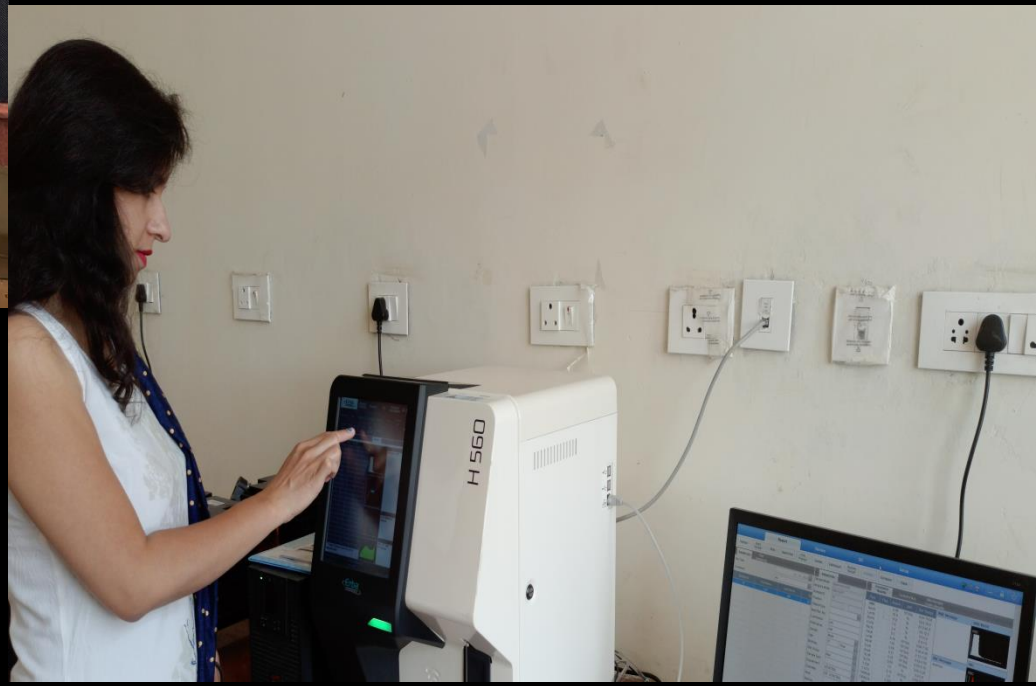
The Sports Biosciences department strives to be on the forefront of research in the field of Sports Physiology, Sports Nutrition and Sports Biochemistry. These are the advanced research areas in the global scenario. The School has a trained and dedicated pool of researchers to tap this potential.

RESEARCH LAB

RESEARCH LAB

ELECTROMYOGRAPHY (EMG) AND NERVE CONDUCTION VELOCITY (NCV)

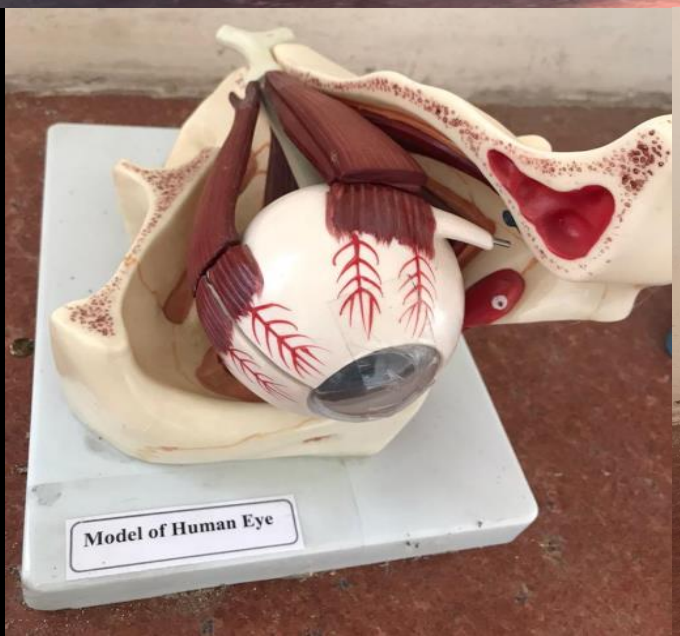
FULLY AUTOMATIC HEMATOLOGICAL ANALYZER



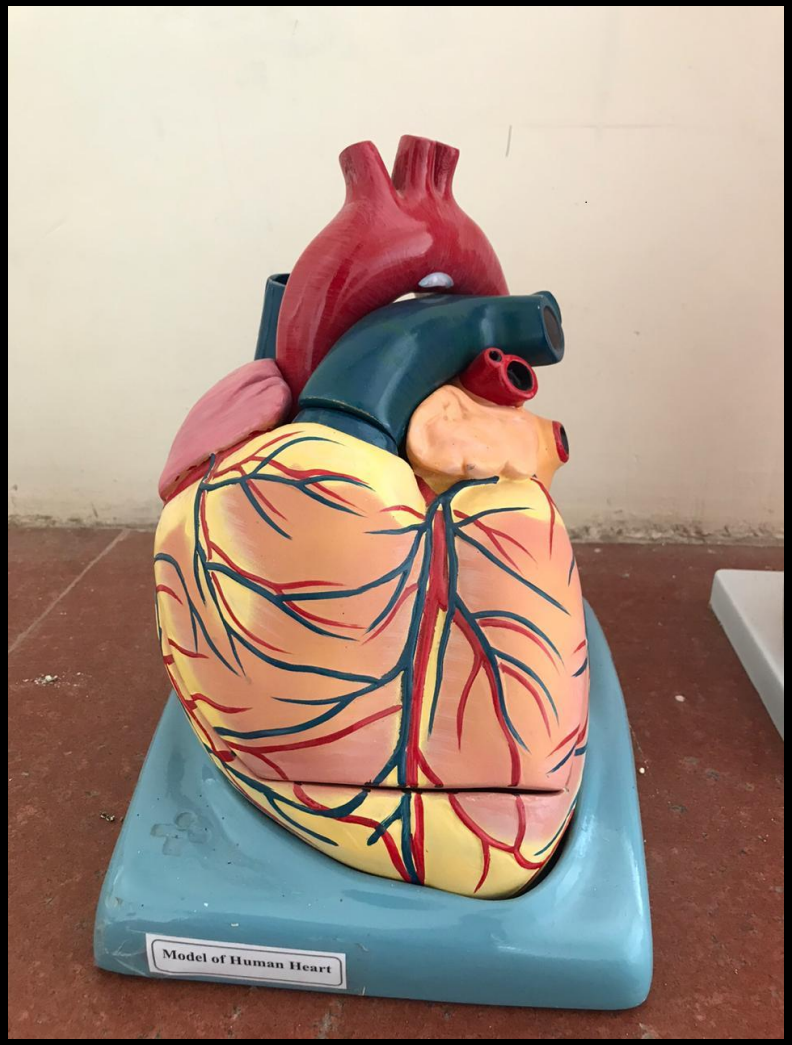
SEMI-AUTOMATIC BIOCHEMISTRY ANALYZER

SPIROMETER

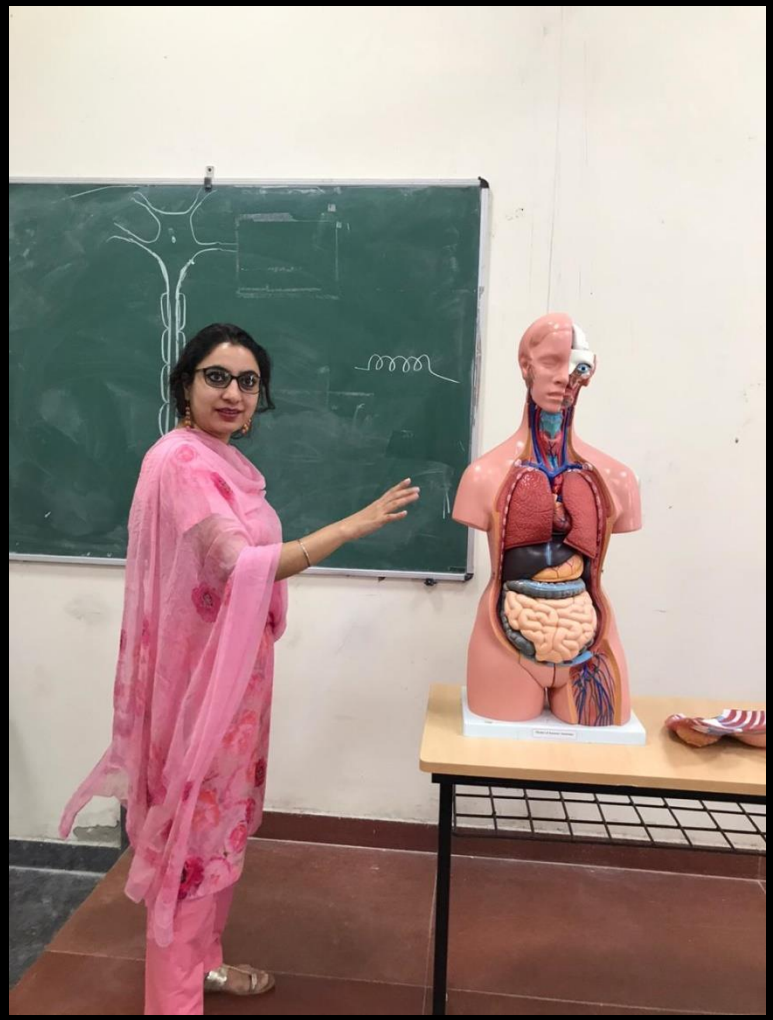
PHYSIOLOGY LAB

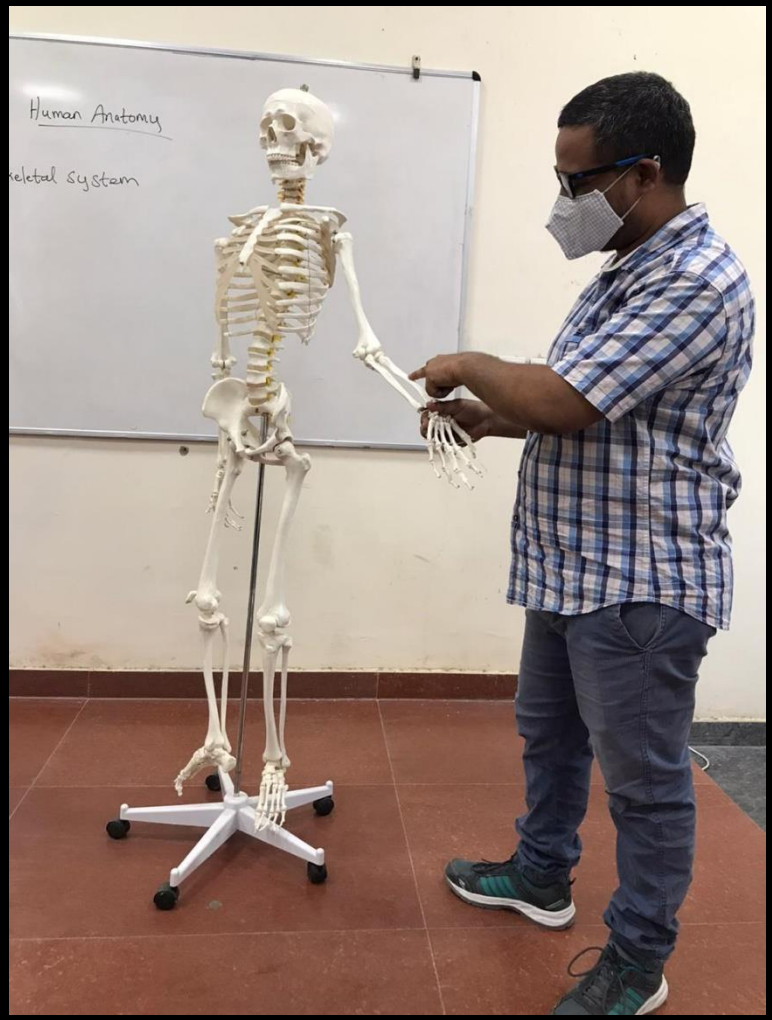


PHYSIOLOGY LAB



ANATOMICAL MODELS





ANTHROPOMETRIC ASSESSMENT

PHYSICAL FITNESS MEASUREMENTS

STUDENTS ACHIEVEMENTS/ACTIVITIES

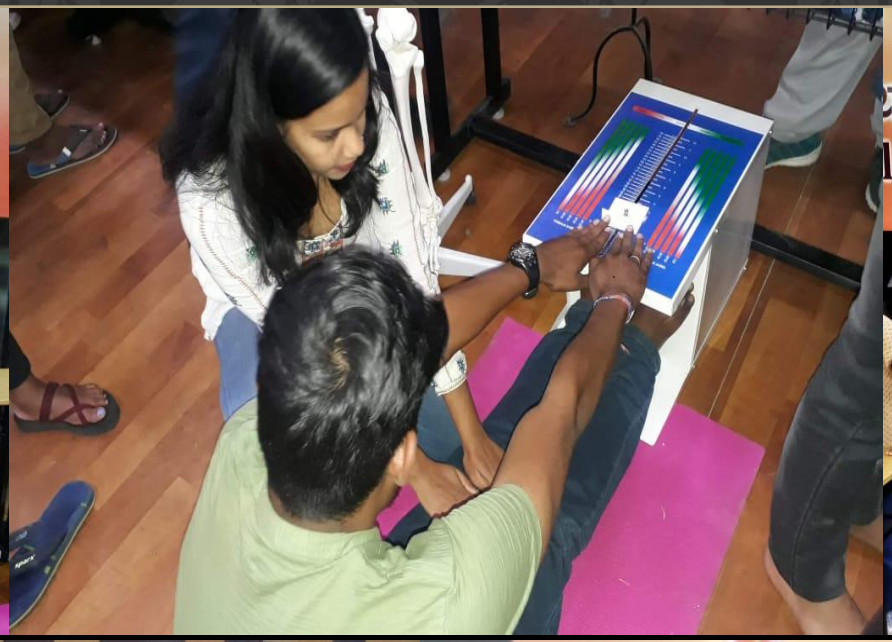
Department organised its first successful event in the form of Sports Science Week named ‘Sports Kinesia-2018’ many students from various Departments of CURAJ participated in different events organised for the whole week and more than 100 people (including students and faculty) participated and got to know their body and nutritional aspects of their health and fitness analysed on the last day of the week in event named as ‘Know Your Body and Nutritional consultation’

TEACHING AND NON-TEACHING STAFF MEMBERS

PHYSICAL FITNESS

ACTIVE PARTICIPATION OF STUDENTS AND FACULTY IN SPORTS ACTIVITIES ALONG WITH ACADEMIC LEARNING AND SCIENTIFIC RESEARCH

SPORTS BIOSCIENCE STUDENTS AT NATIONAL SCIENCE DAY EVENT



GUEST LECTURE BY PROF. G.L. KHANNA (SPORTS PHYSIOLOGY) AND PROF. AGYAJEET SINGH (SPORTS PSYCHOLOGY)

DISTINGUISHED LECTURE BY PROFESSOR JAMES F SALLIS, UNIVERSITY OF CALIFORNIA, SAN DIEGO, USA

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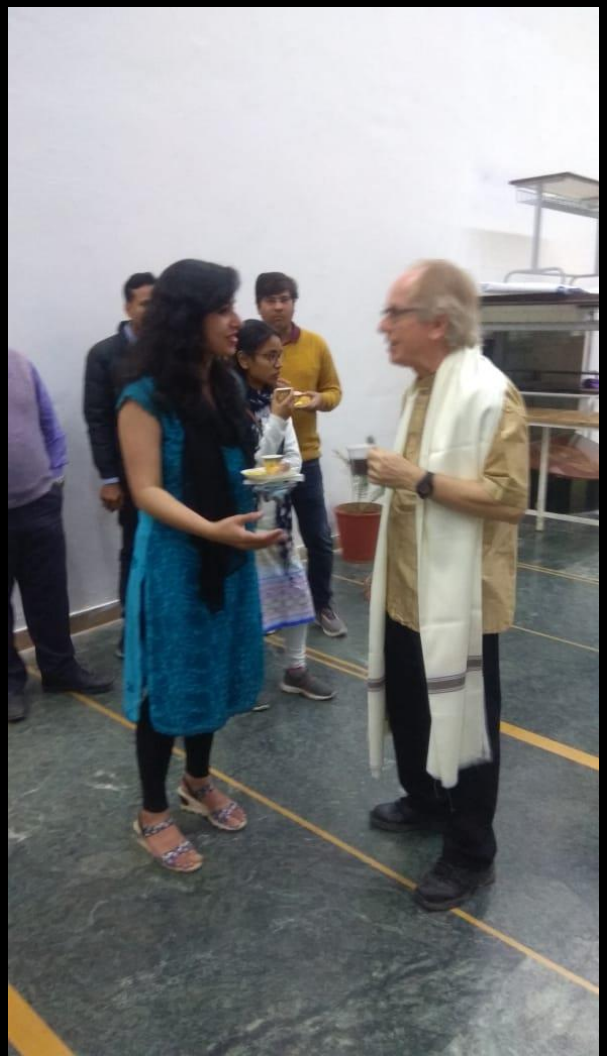
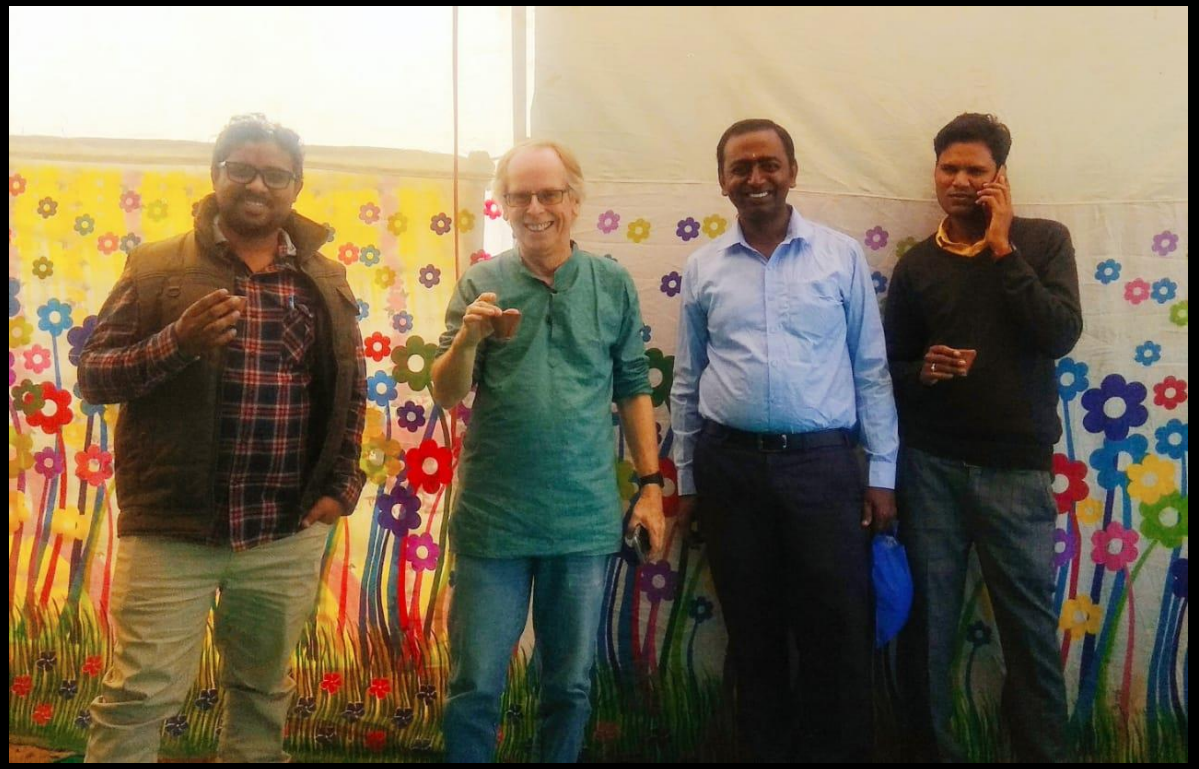
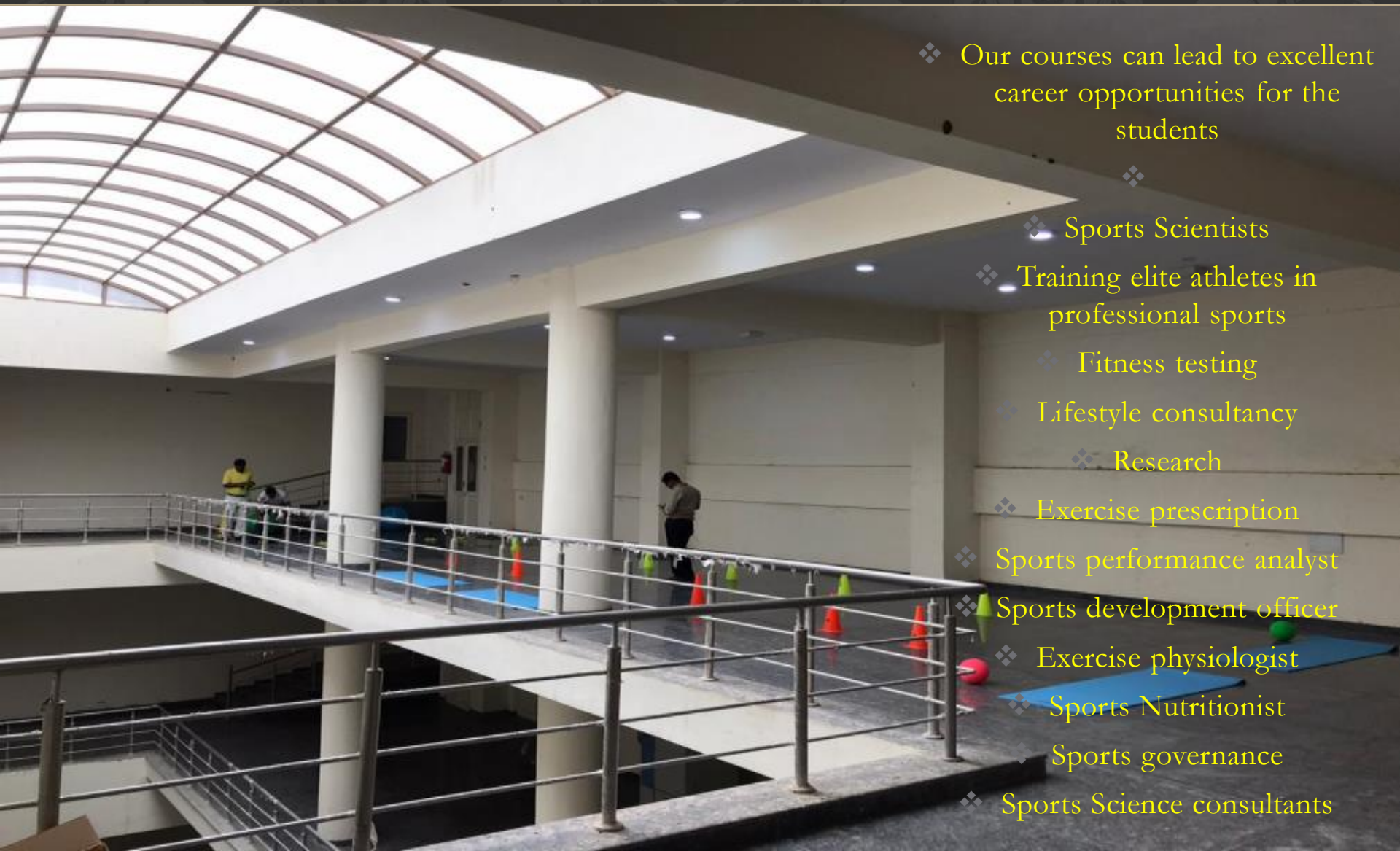




DEPARTMENTAL ACTIVITIES

DEPARTMENTAL ACTIVITIES

CAREER PROSPECTS



- Our courses can lead to excellent career opportunities for the students
- Sports Scientists
- Training elite athletes in professional sports
- Fitness testing
- Lifestyle consultancy
- Research
- Exercise prescription
- Sports performance analyst
- Sports development officer
- Exercise physiologist
- Sports Nutritionist
- Sports governance
- Sports Science consultants