



**REPORT ON
EXPOSURE VISIT TO KALINGA SPORTS COMPLEX,
BHUBANESHWAR
16-18th January, 2024**

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(Rated A++ by NAAC in March 2019)**

Kalinga Sports Complex

Kalinga Stadium foundation stone was laid by the former chief minister of Odisha Biju Patnaik in 1978. It is a multipurpose stadium in the smart city of Bhubaneswar, Odisha. It is situated in the heart of the capital, the Kalinga Sports Complex has facilities for Athletics, Football, Hockey, Basketball, Tennis, Table Tennis, Badminton, Volleyball, Wall Climbing and Swimming. The city of Bhubaneswar has been termed as the 'Sports Capital of India' for hosting a large number as well as a wide variety of sporting events and nurturing future talents.

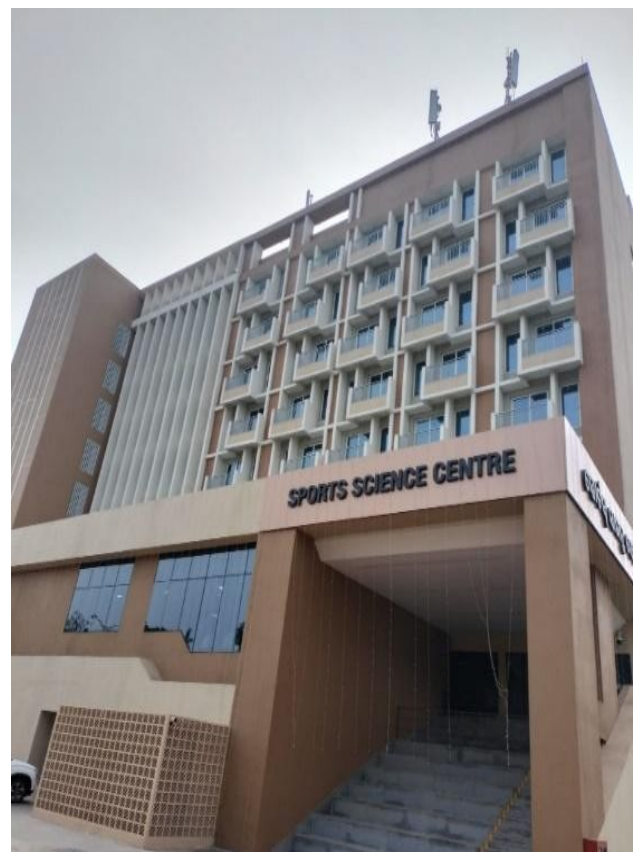
Khelo India State Centre of Excellence

Union Minister of Sports & Youth Affairs Shri Kiren Rijiju virtually inaugurated 8 Khelo India State Centres of Excellence (KISCEs) across India in the presence of distinguished State Ministers . The 8 States include: Manipur, Arunachal Pradesh, Mizoram, Kerala, Telangana, Nagaland, Karnataka and Odisha. KISCE focuses on three disciplines mainly: Hockey, Weightlifting and Athletics. The Central and State Govt. works together and provides necessary financial assistance to develop proper infrastructure and manpower for high quality training & sports science support, with a vision to make India one of the top 10 countries in 2028 Olympics.

Abhinav Bindra Targeting Performance

CM Patnaik inaugurated the India's largest Sports science centre in Bhubaneswar in partnership with Abhinav Bindra, India's first individual Olympic gold medallist. This centre is well maintained and well established with all-inclusive facilities designed to nurse the athletes across various disciplines and is poised to become a hub for injury management, rehabilitation, recovery, and performance enhancement, providing comprehensively to the needs of sporting talent in the region while also being accessible to elite athletes of India. This sports science centre features specialised labs to ensure that athlete's receive best and appropriate care and support tailored to their unique needs working with their potential and forwarding them towards excellence.

This centre has an impressive High Altitude training chamber, largest treadmill, various equipment and machine, recovery lab, biomechanics lab and other with a clean environment overall a pack of everything to individual's needs. Overall the sports science centre provides a comfortable clean relaxed atmosphere for the athletic test and treatment.



DAY 1 (16-01-2024)

VENUE: KHELO INDIA STATE CENTRE OF EXCELLENCE, KALINGA STADIUM SPORTS COMPLEX , BHUBANESWAR.

Equipped with various types of recovery modalities e.g. **Steam Bath** which is beneficial for athletes as it helps in promoting relaxation, reducing muscle tension, and enhancing recovery by increasing blood circulation. The primary components of a steam bath are steam generators, this device heats water to produce steam. It's a crucial element that maintains the proper temperature and humidity. Steam rooms have seating arrangements for users to sit or lie down during the session. Proper ventilation is important to ensure a continuous flow of fresh air and prevent excessive humidity. Steam rooms are often constructed with materials that can withstand high humidity, such as tiles, glass, or acrylic.

In **Sauna**, dry heat is used. The sauna heater warms the air in the sauna, creating an environment with low humidity. Users experience elevated temperatures without the presence of steam. This dry heat helps induce sweating muscle relaxation, potentially helping to reduce muscle tension and soreness after intense workouts. This bath helps in increased blood circulation, detoxification through increased perspiration. The heat stimulates the release of endorphins, promoting a sense of relaxation and well-being & improved sleep .

Ice bath, also known as cold water immersion, is commonly used by athletes for recovery. Cold temperature constricts blood vessels and reduces inflammation, potentially alleviating muscle soreness and swelling after intense exercise. Ice baths aid in muscle recovery by slowing down metabolic activity and decreasing tissue breakdown. Cold water can provide temporary pain relief and help manage post-exercise discomfort. Ice baths are thought to mitigate the severity of DOMS(Delayed Onset Muscle Soreness) that can occur after .

Bod Pod is used to measure body composition, specifically assessing the percentage of body fat and lean body mass. It calculates volume by determining the air displaced when a person sits inside the pod.

FORCE PLATE- Vald's Force Decks

Force plate is a platform equipped with sensors, typically piezoelectric or strain gauge. These sensors measure the Ground Reaction Force (GRF) and asymmetry while a person performs various activities on it, like standing, walking, jumping, or running. In Vald's Force Decks, strain gauges housed in the platform's load cells measure stress, which is proportional to the force applied. These forces are recorded as the individual interacts with the ground, in accordance with Newton's Laws of Motion.



When an individual stands at rest, the GRF represents their body weight. With movement, the GRF changes according to the force the individual applies to accelerate. It works under the principle that dual-force platforms can be used to assess performance in double leg tests and strength and power asymmetries in unilateral jump and isometric tests. However, It also provides an additional level of intelligence on neuromuscular status by evaluating the force distribution between limbs during double-limb tests, revealing critical information on strength asymmetries and compensatory strategies. Force plates are commonly used in sport to assess an athlete's force producing capabilities, strength and imbalance . A practitioner can use a force plate to assess training needs, readiness to train, and also during the return to play process. Typical force plate assessments in sport include the counter movement jump(CMJ), squat jump (SJ),drop jump (DJ), countermovement rebound jump, and isometric mid-thigh pull.

Interaction with olympian

RKMVERI team met with Pranati Nayak, Indian gymnast. She was the 2019 Asian Championships-Vault Bronze medallist also she is the third Indian gymnast to win an International medal on the Vault, after Dipa Karmakar and Aruna Reddy. She represented India at the 2020 Summer Olympics and is only the second Indian female gymnast to qualify for the Olympic Games. Pranati Nayak recently finished 9th place at the FIG World Cup 2024 in Baku, Azerbaijan.



Indoor athletics track

Indoor athletics track at Kalinga stadium complex is by far the biggest indoor athletics track in the whole of South Asia. The indoor athletics stadium features a 200-metre athletic track with a 2000 spectators seating gallery. It also includes an 80m + 20m running track , designated zones for pole vault, shot put, long jump, high jump events. It offers 60 twin sharing rooms and lounges during events .It received the prestigious Category-1 Certification from World Athletics affirming its compliance with standards regarding infrastructure facilities and capabilities. Infrastructure is made for international events. Broadcast room provides various lounges which makes the place suitable for hosting international events related to sports. This newly formed indoor athletics track can be a hub for future athletics events nationally and globally as well.



It is under Reliance Foundation which has a well equipped team of sports specialists and also international coaches. It provides an uninterrupted environment for track and field events- training and competition ,contributing to advancement of sports in India. The estimated cost of this giant project is around 120 crores. Overall, India is contributing a huge budget for the sporting industry to compete in the World championships.

DAY-2 (17-01-2024)

VENUE: ABHINAV BINDRA TARGETING PERFORMANCE KALINGA STADIUM SPORTS COMPLEX , BHUBANESWAR

There were numerous equipments and facilities that could be categorised into training or recovery based on their purpose of use. Some of them are:

Leg press multi stability machines are fitness equipment designed to target and strengthen the muscles in the lower body, particularly the quadriceps, hamstrings, and glutes. The "multi-stability" feature implies that the machine may offer various footplate positions or adjustments to target different muscle groups and accommodate users with different body sizes or fitness levels.

Iso shift, D wall, Digital H sports for gait, motion analysis, force platform which uses 3d infrared cameras to detect body posture and also help in training and rehab through interactive modules.

Altitude Training Chamber is used for simulating normobaric hypoxic conditions which help in training especially for endurance as well as recovery purposes . The chamber mimics air pressure found at various altitudes. Users exercise or sleep in these chambers to adapt to lower oxygen levels, for improving cardiovascular and respiratory systems.



Prokin is a proprioceptive-stability metric assessment machine, one of the most widespread systems used for the rehabilitation of the lower limbs. It makes evaluation of the balance of the patients and athletes in both the orthopaedic and neurological areas during the recovery from injuries easier. Trunk Sensor is the bi-axial inclinometer that, applied to the torso during the exercises performed on Prokin, which makes it able to detect the oscillations of the torso in every direction. The use of the trunk sensor combined with Prokin during proprioception exercises helps to assess if the subject has good peripheral control, i.e. the control of ankles, knees and even, without making the bust intervene to compensate for poor posture.

Principle behind Prokin- It helps to rebuild the correct proprioceptive sensing map. Static Prokin allows the athletes to be evaluated in a static situation based on oscillation of the centre of pressure (COP). Dynamic Prokin is useful for a dynamic bipedal exercise that returns a test on the management of instability by the subject. The Prokin system software is equipped with many assessment programs that allow us to understand exactly what the proprioceptive conditions of athletes are.



Anti- Gravity Treadmill

There were various types of treadmill, one of the most advanced was the Anti-Gravity Treadmill which is based on state-of-the-art technology that allows the athletes to run or walk with reduced impact. Patented by NASA, the antigravity treadmill provides up to 80% of the body weight support while reducing the strain and stress on the body. Alter G Anti-Gravity Treadmill uses a lifting effect to ease the impact on lower extremity . It is ideal for physiotherapy after sports injury , knee and hip replacement or stroke. It assists subjects who have been



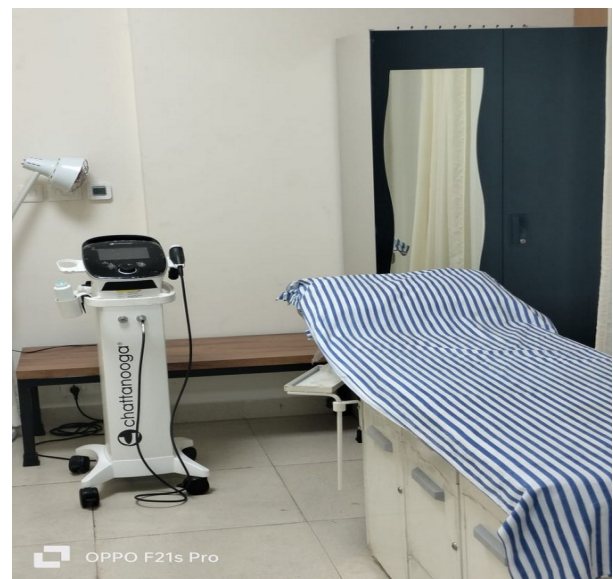
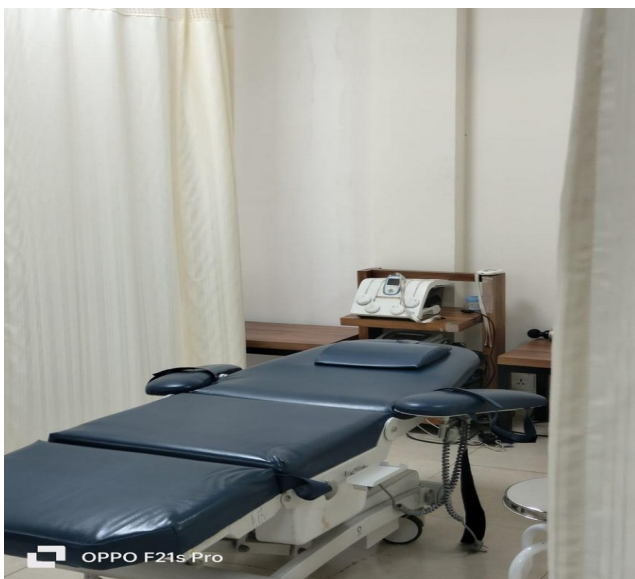
prescribed by their physician to start weight-bearing exercise as prescribed, such as those recovering from ACL surgery, stress fractures, joint replacement or stroke.

India's Largest Treadmill-Valiant Ultra 450

It has a belt surface of 450 cm x 300 cm which makes it the only treadmill that can be used to train agility or reaction ability. It can be controlled by external stress test ECG and ergo spirometry devices through the RS232 or USB port. Equipped to provide conditions of positive and negative elevation of 15% with speed ranging from 0 – 40 km/h. It has an integrated blood pressure module and SpO2 and maximum weight allowed to be carried is up to 225 kg.



Physical Therapy (PT), also known as physiotherapy, is a healthcare profession, as well as the care provided by physical therapists who promote, maintain, or restore health through patient education, physical intervention, disease prevention, and health promotion. The athletes get acute care, massage, treatment, rehabilitation with the help of physiotherapeutic equipments like ultrasound, laser therapy, needling etc.



Dream Pod

Dream pod which is simply a flotation tank is filled with a solution of water mixed Epsom salt that allows one to float easily providing a sense of weightlessness which aids in stress reduction, enhanced mental clarity, ultimately as a deep relaxation therapy.



Group photo at ABTP Sports Science Centre with Dr. Sutanu Chakraborty (Lead Exercise Physiologist, ABTP) along with our faculty member of RKMVERI

DAY-3 (18-01-2024)

VENUE: KHELO INDIA STATE CENTRE OF EXCELLENCE, KALINGA STADIUM SPORTS COMPLEX , BHUBANESWAR

Lecture series by Senior Sports scientist:

“Doping in sports” by Dr. PSM Chandran

Doping refers to the use of banned substances in competitive sports. Drugs are used by athletes to improve their athletic performance. Doping is one of the important criteria in sports because these substances can have harmful and long-lasting side effects which may include the following:

- Cardiovascular: irregular heart rhythm, elevated blood pressure, heart attack, sudden death
- Central Nervous System: insomnia, anxiousness, aggressive behaviour, suicide, addiction with withdrawal, psychosis, tremor, dizziness, stroke
- Hormonal: infertility, gynecomastia (enlarged breasts), decreased testicular size, low sex drive, acromegaly (coarse bones in face, hands, and feet), cancer

The second issue is more of a moral dilemma. These banned substances are used to gain an unfair advantage which significantly devalues the spirit of competition. As stated by the World Anti-Doping Agency (WADA), the purpose of an anti-doping program is “to protect the athletes’ fundamental right to participate in doping-free sport and thus promote health, fairness and equality for athletes worldwide. Some drugs are banned both in and out of competition due to their performance enhancing properties, while others are only banned during competition.

Stimulants, anabolic steroids, peptide hormones (i.e. human growth hormone [hGH]), alcohol and beta blockers, diuretics, beta-2 agonists, anti-estrogens, blood doping, and gene manipulation. Protection acts the largest anti-doping organisation is WADA. WADA has developed a coordinated, worldwide anti-doping program that applies to sports that have signed a pledge to uphold the WADA Code. The WADA Code outlines their “anti-doping policies, rules, and regulations with sport organisations and among public authorities around the world”. Athletes who participate in sports that have signed the WADA code are subject to random in and out of competition testing. Testing may be performed on urine and/or blood samples depending on the substances being tested. In sports that follow the WADA Code, a single violation can result in a ban from sports competition of up to 2 years while a second violation may result in a lifetime ban. NADA (National Anti-doping agency) located in New Delhi is also programmed to protect the athletes from using doping substances in sports and it is legally banned with strict rules for the benefits of athletes and providing equality among sports athletes.

“Prevention of sports injury” by Sri Sujit Kumar Swain

Physiotherapy is very important in sports because it helps us in preventing injuries and to help us to recover from injuries. Injury prevention Sports and exercise physiotherapists assess the risk of injury associated with participation in a specific sport or physical activity. They are equipped to inform and train athletes, coaches and other members of the multidisciplinary team in such a way that there is a reduction in occurrence and recurrence of specific injuries.

“Selection of Talent in Sports and Monitoring” by Dr. S. K. Dey

Talent identification plays an important role in sports mainly because everyone is not suitable for playing a particular game and by using some parameters, we can find which person will be suitable to play a particular sport.



RKMVERI Team with KISCE HOD- Dr PSM Chandram, Senior and Junior Sport Scientists