

EVENT REPORT - BCIPCON 2k24

Innovation and Technology in Physiotherapy: A Way Forward

Topic of Conference	Innovation & Technology in Physiotherapy: A Way Forward
Date (s)	: 20 th -21 st July 2024
Venue (s)	: Auditorium, Banarsidas Chandiwala Sewa Smarak Trust Society (SBCSSTS)
Duration (s)	: 2 days, 09:00 HRS to 16:00 HRS
Brief Contents & Objective	<p>This conference explored the exciting intersection of innovation and technology in physiotherapy. Emerging technologies in physiotherapy, such as robotics, Telehealth and remote physiotherapy solutions, applications of technology for patient care, rehabilitation, and injury prevention, and the future of physiotherapy practice advances in technological integration were discussed in this Conference.</p> <p>Objectives:</p> <ul style="list-style-type: none">• Educate budding physiotherapists on the latest advancements in technology relevant to their practice.• Foster collaboration and discussion on how technology can be used to improve patient outcomes.• Equip physiotherapists with the knowledge and skills to integrate technology effectively into their practice.• Explore the ethical considerations and practical challenges of using technology in physiotherapy

BCIPCON-2K24-Role of Tele-Physiotherapy on Pulmonary Rehabilitation

Session: I

Topic: Role of Tele-Physiotherapy in Pulmonary Rehabilitation

Speaker: Dr. Sumata Ghosh, Co-Founder, Healthspecifics Academy, Delhi

Date: 21st July 24

Time: 09:20am

Rapporteur: Dr. Mohd Asif

Description: On 21st July 2024, Dr Sumanta Ghosh delivered an enlightening session on Role of Tele-Physiotherapy in Pulmonary Rehabilitation. Dr Sumanta Ghosh discussed both conventional and contemporary technologies, putting more focus on advancing the field of Cardio-Pulmonary-rehabilitation. This talk clarified the ground-breaking developments in Pulmonary-rehabilitation and greatly expanded our knowledge of how cutting-edge tele-rehabilitation revolutionizing patient treatment. Sir also mentioned that Tele-medicine used different technological means to provide a medical approach at home in place of the traditional face-to-face approach of medicine, Tele-rehabilitation is one branch of tele-medicine adapted to the world of the rehabilitation. It tends to maintain the advantages of a classical rehabilitation and to overcome its disadvantages by providing easier access to healthcare services at home with an improved adherence

Dr Sumanta Ghosh elaborated on recent advancements in pulmonary physiotherapy and has also discussed the role of telerehabilitation in the same way. He further highlighted that the telerehabilitation in pulmonary Physiotherapy is comparable with in-person rehabilitation or better than no rehabilitation as for other conditions such as osteoarthritis, low-back pain, hip and knee replacement, and multiple sclerosis and in the context of cardiac and pulmonary rehabilitation.

A key takeaway from the session was the till now, the pulmonary rehabilitation has been mainly provided in specific centres even if it can also be efficiently practised out of these centres. The limited access to the centres providing such facilities is one of the main barriers. The pulmonary rehabilitation in tele form makes an important contribution to healthcare as less cost is associated with the travel, transportation and parking facilities. The feasibility and effectiveness of tele-rehabilitation have previously been demonstrated in many medical conditions.

In conclusion, Dr Sumanta Ghosh's presentation was both inspiring and informative, offering a comprehensive overview of how conventional and contemporary technologies are integral to rehabilitation. The session provided valuable insights into the future of physiotherapy and Pulmonary-rehabilitation, emphasizing the need for continued innovation and collaboration

Session: II

Topic: Aligning Innovation in Physiotherapy with Sustainable Development Goals

Speakers: Dr. Kshitija Bansal, Professor, MRIIRS, Faridabad

Date: 21st July 24

Time: 10:00am

Rapporteur: Dr. Prithvi Parasher

Description: Dr. Kshitija Bansal delivered the talk on “Aligning Innovation in Physiotherapy with Sustainable Development Goals”. She excellently delivered the lecture on Sustainable Development Goals (SDGs) as a global call to action to end poverty, protect the planet, and ensure that all people enjoy peace and prosperity by 2030. She further mentioned that Physiotherapy plays a crucial role in several SDGs, particularly:

- Good Health and Well-being (SDG 3): Physiotherapy promotes health and well-being through rehabilitation, injury prevention, and health education, contributing to achieving universal health coverage and reducing mortality rates.
- Quality Education (SDG 4): Physiotherapy education ensures the development of skilled professionals who can contribute to health systems, promoting lifelong learning opportunities.
- Gender Equality (SDG 5): Physiotherapy addresses gender disparities in access to healthcare by providing inclusive services that cater to diverse needs and conditions.
- Decent Work and Economic Growth (SDG 8): Physiotherapists contribute to economic growth by enhancing workforce productivity through rehabilitation and promoting active and healthy aging.
- Reduced Inequalities (SDG 10): Physiotherapy services aim to reduce inequalities in health outcomes by providing accessible, affordable, and equitable care to all populations, including vulnerable groups.
- Sustainable Cities and Communities (SDG 11): Physiotherapy supports urban planning and design for inclusive, safe, resilient, and sustainable cities by promoting active lifestyles and accessible healthcare services.
- Climate Action (SDG 13): Physiotherapy practices can adopt sustainable healthcare practices, reducing environmental impact through energy efficiency, waste reduction, and promoting sustainable behaviors.
- Partnerships for the Goals (SDG 17): Collaboration between physiotherapists, healthcare providers, policymakers, and communities is essential to achieve the SDGs, fostering partnerships for sustainable development.

In conclusion, she explained that physiotherapy contributes significantly to multiple SDGs by promoting health, well-being, inclusivity, and sustainability through its services, education, and advocacy efforts and integrating SDGs into physiotherapy practice and education ensures a holistic approach to global health and development challenges.

Session III: TECHNOLOGY DRIVEN ENTREPRENEURSHIP IN PHYSIOTHERAPY

Session: III

Topic: Technology Driven Entrepreneurship in Physiotherapy

Speaker: Dr. Anil Kumar Sharma, Founder, The Physicare, Delhi

Date: 21st July 24

Time: 09:20am

Rapporteur: Dr. Jyoti Kataria

Description: Dr. Anil Sharma delivered the session on technology-driven entrepreneurship in Physiotherapy and highlighted how it is reshaping the physiotherapy profession, enhancing patient care, and opening new avenues for physiotherapists to expand their practice and impact. The session's objective was to make the participants aware of the ways modern technology is being integrated into physiotherapy practices and to highlight potential business opportunities within the field.

Dr. Anil Sharma opened the session with a discussion on the current state of technology in the physiotherapy profession. Sir highlighted the following key areas such as **Tele-rehabilitation which means** Utilizing video conferencing and remote monitoring to provide therapy to patients at home, **Wearable Technologies such as the devices** that monitor patient progress and provide real-time feedback and **Mobile Apps:** Applications that offer guided exercises and track patient progress. He has also presented on the entrepreneurial landscape within physiotherapy, emphasizing the potential for innovation.

Dr. Anil Sharma strengthened his talk by delivering several case studies of successful entrepreneurial ventures that have harnessed technology to revolutionize physiotherapy focusing on Innovative technique development and Mobile Applications.

In Conclusion, this seminar on technology-driven entrepreneurship development in the physiotherapy profession highlighted the significant impact of technology on enhancing patient care and creating new business opportunities. This session also underscored the critical role of technology in shaping the future of physiotherapy, inspiring participants to embrace innovation and entrepreneurship in their professional

Session IV: REPORT- RECENT ADVANCEMENTS IN NEURO-REHABILITATION- BCIPCON-2K24

Session: IV

Topic: Robotics in Neuro-Rehabilitation

Speaker: Dr. Sachin Samuel, Physiotherapist & HOD, Institute of Brain & Spine, Delhi

Date: 21st July 24

Time: 11:20am

Rapporteur: Dr. Himani Kaushik

Dr Sachin Samuel delivered an enlightening session on Recent Advancements in Neuro-Rehabilitation. Dr Sachin Samuel discussed both traditional and recent technologies, emphasizing their importance in advancing the field of neurorehabilitation. The presentation shed light on the groundbreaking advancements in neuro-rehabilitation, significantly broadening our understanding of how robotics and advanced neurotechnologies are transforming patient care.

Dr Sachin Samuel explored recent advancements, including robotics, repetitive transcranial magnetic stimulation (rTMS), Pablo-gait analysis, HOPE of Hand, and electromyography (EMG). These technologies hold incredible potential in enhancing rehabilitation outcomes. Robotics in neuro-rehabilitation, as emphasized by Dr Sachin Samuel, is not just about machines but about leveraging precision, consistency, and adaptability to facilitate recovery. Robotic devices play a crucial role in enhancing the rehabilitation process by providing targeted, repetitive, and intensive therapy, essential for patients with neurological impairments.

A key takeaway from the session was the role of neural plasticity. Neural plasticity, the brain's remarkable ability to reorganize itself by forming new neural connections, is fundamental to neuro-rehabilitation. Dr Sachin Samuel demonstrated how robotic therapy and recent technologies can stimulate neural plasticity, promoting recovery by encouraging the brain to adapt and relearn functions compromised due to injury or illness. This synergy between recent technologies, robotics and neural plasticity paves the way for more effective and personalized rehabilitation protocols.

Moreover, Dr Sachin Samuel emphasized integrating these technologies into physiotherapy practice, reflecting a forward-thinking approach to patient care. As we continue to innovate and embrace new technologies, it is crucial to maintain a patient-centred focus, ensuring these advancements are accessible and tailored to meet each individual's unique needs.

In conclusion, Dr Sachin Samuel's presentation was both inspiring and informative, offering a comprehensive overview of how traditional and recent neurotechnologies are integral to rehabilitation. The session provided valuable insights into the future of physiotherapy and neuro-rehabilitation, emphasizing the need for continued innovation and collaboration.

“Tech Advancement in Neuro-Rehabilitation”

Session: V

Topic: Technological Advancement in Neuro-Rehabilitation

Speaker: Dr. Prateek Aggarwal & Dr. Jaishree, Centre Head, IHIF, Delhi & Noida.

Date: 21st July 24

Time: 12:00am

Rapporteur: Dr. Sapna Yadav

Description: Dr. Prateek and Dr. Jaishree, renowned experts in neurorehabilitation, delivered a comprehensive presentation on recent tech advancements in the neurorehabilitation, emphasizing how cutting-edge technologies are revolutionizing treatment methods and outcomes for patients with neurological impairments. Dr. Jaishree talked about the different interventions and technology such as RYMO which offers precise, effective, and engaging therapy for motor function recovery and quality of life improvement. Benefits offered by this device are Initial Assessment, Customized Program, Guided Therapy Sessions, Monitoring Progress, Complementary Therapies.

Dr. Prateek has mentioned that Neurorehabilitation has seen transformative changes due to technological advancements, making physiotherapy and rehabilitation more effective, personalized, and accessible. One of the cornerstone technologies in neurorehabilitation is Robotic Assistance Technology. For instance, RYMO offers precise, effective, and engaging therapy that aids patients in recovering motor function and improving their quality of life. This technology includes initial assessments, customized programs, guided therapy sessions, progress monitoring, and complementary therapies. Both upper and lower limb robotic training are essential components of functional recovery, providing tailored interventions to meet individual patient needs.

Dr. Jaishree mentioned that Functional Electrical Stimulation (FES) is another critical technology used to prevent muscle atrophy, promote neural plasticity, enhance circulation, reduce spasticity, improve motor function, and strengthen muscles. She further explained how by incorporating FES into rehabilitation routines, patients can practice functional tasks and maintain muscle health, which is crucial for long-term recovery. She further elaborated that **Gait Training** has been revolutionized by the integration of Virtual Reality (VR) and Augmented Reality (AR) technologies, such as Tymo and by offering real-time feedback and assistance during balance exercises, offering customizable programs that enhance balance and stability. She also discussed about the modalities available for upper limb rehabilitation as the Interactive Assessment and Exercising of Upper Limbs (Pablo) system is invaluable which helps to improve motor skills, coordination, cognition, and strength through engaging gamification and real-time feedback.

EMG Biofeedback (Myomed) enhances muscle awareness and control, provides targeted muscle training, and supports neuromuscular re-education. This technology motivates patients and keeps them engaged, which is essential for successful rehabilitation outcomes.

The importance of follow-up in neurorehabilitation cannot be overstated. Tele-rehabilitation allows for remote therapy sessions, ensuring continuous care and support. Group support meetings and virtual platforms for verbal, written, or video-based feedback facilitate follow-up planning and keep patients engaged in their recovery journey.

Dr Jaishree also talked about a practical example of these technologies in action in case of Mr. X, a 30-year-old male with incomplete spinal cord injury. She explained how before rehabilitation, Mr. X had significant bilateral lower limb weakness and was completely dependent on others for activities of daily living (ADLs), with no urinary and bladder control. After undergoing a comprehensive rehabilitation program involving these advanced technologies, his condition improved remarkably. His ASIA grade improved, and he regained substantial motor function and sensory abilities.

Finally, Dr Jaishree concluded that IHIF Centres are committed to continuous education and training. Special training programs for physical therapists, occupational therapists, and special educators, along with volunteer opportunities for training, research, and project work, ensure that professionals are well-equipped to utilize these advanced technologies effectively.

