# AMIT KUMAR VIMAL, BPO, MPO, PhD (IIT-D)

*Curriculum Vitae*

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## Education Qualification

**2013 – 2021** **PhD from Centre for Biomedical Engineering, Indian Institute of Technology- Delhi (IIT-D)**

Awarded – September 2021

*Dissertation:* Improvement in Unilateral Above Knee Amputee's Limit of Stability by Using Vibrotactile Feedback. Link: https://web.iitd.ac.in/~sbhasin/docs/Thesis_Final_4_print.pdf

**2010 – 2012** **Master in Prosthetic and Orthotic (MPO)** from **Guru Gobind Singh Indraprastha University (GGSIPU)- Delhi**

*Research Synopsis* **-** Effect of Side Load Carriage on Energy Expenditure and Gait Characteristic in Right-Handed Unilateral Transtibial Amputee.

**2004 - 2009** **Bachelor in Prosthetics & Orthotics (BPO)** from **Pt. Deendayal Upadhyaya, National Institute for Persons with Physical Disability (Divyangjan), Delhi University**

*Project:* Upper limb prosthetic control using EMG and electric hand.

## Professional Positions

**2017 – Present** **Institute: Pt. Deendayal Upadhyaya, National Institute for Persons with Physical Disability (Divyangjan), Delhi University**

Designation: Demonstrator in the Department of Prosthetics and Orthotics
Job Experience

- In-charge Lecturer from 2017-2019
- Coordination of lectures for BPO course.
- Teaching to the BPO and MPO students.
- Clinical practice in Prosthetics and Orthotics

**2012 -2012** **Otto Bock India Pvt. Ltd.**
Resident Prosthetist and Orthotist

**2012 - 2017** **Hospital: VMMC and Safdarjung Hospital, Delhi**
Designation: Jr. Orthotic Technician
Job Experience:

- Clinical orthoses fabrication and fitting.
  - Teaching to the BPO students.

**2009 – 2010** **Company: Total prosthetic and orthotic India (P) Ltd., Noida**
Designation: Clinical Prosthetist and Orthotist
Job Experience :

- Clinical assessment of the patient
- Fabrication of prostheses and Orthoses and fitting.

**2016** Clear Online CBT Examination held on 19-11-2016, for recruitment to the permanent post of Technical Officer (R&AL) at AIIMS New Delhi.

**2016** Clear written Examination held on 30-04-2016, for recruitment to the permanent post of Demonstrator(PO) at Pt. Deendayal Upadhyaya, National Institute for Persons with Physical Disability (Divyangjan), Delhi University

**2016** Clear written Examination held on 30-04-2016, for recruitment to the permanent post of Prosthetist and orthotist at Pt. Deendayal Upadhyaya, National Institute for Persons with Physical Disability (Divyangjan), Delhi University

## Certification

**2007 - 2008** **Research Projects certification in Indian Institute of Technology- Delhi**
**Topic: EMG Based Myo-Electric Hand Prosthesis**
Supervision: Prof. Sneh Anand (Professor, Centre for Biomedical Engineering, IIT-Delhi)

Role: Design of EMG circuit to acquire EMG signal data from residual muscles below elbow prosthetic hand.

Status: Design a prototype and test with two patients, submitted to the department.

**2010 - present** Registered Certification from Rehabilitation Council of India (RCI) Reg. No. A17536.

**2010** I-Limb prosthetic hand certification from the Director of Touch Bionic, Scotland, U.K.

**2011** Statistical SPSS package certification.

**2015** Designing Medical Implants & Fixtures short-term course certificate.

**2015** Open House 2015, IIT Delhi certificate.

## Resident Program/Programs

**2012** Otto Bock HealthCare India

**2022** Specialized course in Prosthetics "transfemoral Prosthesis with

Ischial containment socket" conducted by Human Study e.V. - Knowledge for a Better Life, Germany.

**2022** Hands-on Clinical Training on: Cerebral Palsy (CP): current treatment Methods

## Awards

**2022** 2nd prize on best paper in OPAI conference, GOA

**2017** Research and innovation award in Open House 2017

**2017** Leave A Nest award in India Round of Tech Planter's 2017 (Travel stipend)

**2015** A travel stipend of EUR 1000 and complimentary registration to the congress (International Society for Prosthetics and Orthotics)

**2013** A travel stipend of EUR 500 as well as complimentary registration to the congress (International Society for Prosthetics and Orthotics)

## Academic involvement with other Institutes and Universities

**2018** I Appointed as a paper setter and examiner for BPO and MPO courses in Guru Gobind Singh Indraprastha University (GGSIPU)- Delhi

**2018** I Appointed as a paper setter and examiner for BPO course in MGM University, Maharashtra

**2017** I Appointed as a paper setter and examiner for BPO and MPO courses in Pt. Deendayal Upadhyaya, National Institute for Persons with Physical Disability (Divyangjan), Delhi University

**2016** I Appointed as a paper setter and examiner for BPO course in PGIMS Rohtak - Pt Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences.

**2015** I Appointed as a paper setter for BPO course, The West Bengal University of Health Science.

## Dissemination of Research

**Journal Publication**

**2022** Vimal AK, Sharma S, Gahlawat B, Pandian G, Sural S. The Effect of Customized and Silicon Insoles on Mid-and Hindfoot in Adult Flexible Pes Planovalgus. Indian Journal of Orthopaedics. 2022 Nov;56(11):1897-905 **[impact factor= 1.33]** https://doi.org/10.1007/s43465-022-00699-0

**2020** Vimal AK, Verma V, Khanna N, Joshi D. Investigating the effect of vibrotactile feedback in transfemoral amputee with and without movable ankle joint. *IEEE Transactions on Neural Systems and Rehabilitation Engineering.* 2020 Nov 6;28(12):2890-900. **[impact factor= 4.528]**

**2019** Vimal AK, Kant Godiyal A, Singh U, Bhasin S, Joshi D. Transfemoral amputee's limit of stability and sway analysis during weight shifting exercise with a vibrotactile feedback system. *Somatosensory & motor research*. 2019 Jan 2;36(1):31-41. **[impact factor= 1.235]**

**2019** Vimal AK, Swami P, Anand S, Singh U, Bhasin S, Joshi D. Search algorithm for optimal damping parameters of transfemoral prosthetic limb. *Applied Mathematical Modelling*. 2019 Aug 1;72:356-68.**[impact factor= 5.336]**

**2018** Pandit S, Godiyal AK, Vimal AK, Singh U, Joshi D, Kalyanasundaram D. An Affordable Insole-Sensor-Based Trans-Femoral Prosthesis for Normal Gait. *Sensors*. 2018 Feb 27;18(3):706. **[impact factor= 3.84]**

**2012** AK Vimal, et al., Close and loose-packed position concept implementation in hand splint. Journal of orthotics and prosthetics association of India, June 2012, page no 31-34 **[ISSN- 2248-9487]**

**2011** AK Vimal, et al., Myo-electric hand circuit for the below elbow. Journal of orthotics and prosthetics association of India, vol1, June 2011, page no 21-26 **[ISSN- 2248-9487]**

**Online Publication of scientific paper presented in International Conference**

**2017** Vimal AK, Pandit S, Godiyal AK, Anand S, Luthra S, Joshi D. An instrumented flexible insole for wireless COP monitoring. In2017 8th International Conference on Computing, Communication and Networking Technologies (ICCCNT) 2017 Jul 3 (pp. 1-5). IEEE.

**2017** Godiyal AK, Pandit S, Vimal AK, Singh U, Anand S, Joshi D. Locomotion mode classification using force myography. In Life Sciences Conference (LSC), 2017 IEEE 2017 Dec 13 (pp. 121-124). IEEE.

**2015** Vimal AK, Bhasin S, Sharma S, Anand S, Swami P. Brace design for knee-angle measurement in human gait using infrared sensor. In Signal Processing and Communication (ICSC), 2015 International Conference on 2015 Mar 16 (pp. 201-203). IEEE.

**International Conference Presentation**

**2015** International Poster presentation titled "A novel Crank system brace for Measure Knee Angle in Dynamic state" in ISPO- 2015, Lyon, France.

**2015** International Poster presentation titled "the effect of custom moulded thoracic lumbosacral orthosis (TLSO) on sitting balance in person with spinal cord injury" in ISPO- 2015, Lyon, France.

**2013** International paper presentation title "The role of Quadratus Lumborum muscle in asymmetrical loading condition in unilateral transtibial amputee" in ISPO-2013, Hyderabad, India.

**2008** International Presented a paper titled "Myo-electric hand for an upper limb amputated person" in Control instrument system conference CISCON-2008 page no-268-271, MIT-Manipal, India

**Scientific paper presentation on Under-graduated Project**

**2022** Scientific paper presentation titled **"**Modified harness system for transradial body powered prosthesis**"**, "OPAI" 2022, National Conference of Orthotic & Prosthetic on 28th to 30th March – 2022 at Goa

**2022** Scientific paper presentation titled **"**Developing a low cost electric prosthetic hand**"**, "OPAI" 2022, National Conference of Orthotic & Prosthetic on 28th to 30th March – 2022 at Goa

**2020** Scientific paper presentation titled **"**Betterment of psycho-social life of muscular dystrophic patient**"**, "OPAI" 2020 XXV National Conference of Orthotic & Prosthetic on 7th to 9th February – 2020 at Bhubanaswar Odisha

**2020** Scientific paper presentation titled **"**Ergonomically controlled mouse operating device for CTS patient**"**, "OPAI" 2020 XXV National Conference of Orthotic & Prosthetic on 7th to 9th February – 2020 at Bhubanaswar Odisha

**2020** Scientific paper presentation titled **"**Modified brace for gleno-humeral subluxation in hemiplegic and stroke patients**"**, "OPAI" 2020 XXV National Conference of Orthotic & Prosthetic on 7th to 9th February – 2020 at Bhubanaswar Odisha

**2020** Scientific paper presentation titled **"**classification of scoliotic curve towards clinical approaches for the brace for scoliosis**"**, "OPAI" 2020 XXV National Conference of Orthotic & Prosthetic on 7th to 9th February – 2020 at Bhubanaswar Odisha.

**2020** Scientific paper presentation titled **"**Role of Brain Computer Interface (BCI) in the field of Prosthetics and Orthotics**"**, "OPAI" 2020 XXV National Conference of Orthotic & Prosthetic on 7th to 9th February – 2020 at Bhubanaswar Odisha

**2020** Scientific paper presentation titled **"**Cyborg Technology Evolution in Orthotic and Prosthetic Technology**"**, "OPAI" 2020 XXV National Conference of Orthotic & Prosthetic on 7th to 9th February – 2020 at Bhubanaswar Odisha

**National Conference Presentation**

**2010** Scientific paper presentation titled "Cost Effective Myo –Hand System" in the XIX OPAI-2010 national conference- Delhi

**Invited Speaker**

**2022** Guest speaker in CRE program on **Lower Extremity Exoskeleton System organized in PDUNIPPD, New Delhi**. *The topic of the lecture* **CAT CAM Mechanism : Application in lower limb prosthesis.**

**2019** Guest speaker in CRE program on Evidence-Based Orthotic Management of Spinal Cord Injury Patients. ***The topic of the lecture: Functional Electrical Stimulation (FES), evaluation for people with paraplegia****.*

**2019** Volunteer contribution in the organization of 5 days CRE program on Research Methodology in the field of Disability Rehabilitation and Special education and delivered ***the lecture on 'Use of Mendeley for reference'.***

**Research Guidance for thesis**

**2019** MPO thesis on Comparative study for the immediate correction of Pes planovalgus deformity using customized and silicon insoles

**2020** MPO thesis on A Comparative Study Between Taylor's Brace And Elastic Postural Brace For The Balance & Gait Of Individuals With Osteoporotic Spine

**2022** MPO thesis on assessment of mobility of patient with and without transtibial prosthesis in improving the quality of life- a cross sectional study

**2022** MPO thesis on analyzing the muscle activity with and without medial arch support insole in the person with flat foot

**Member**

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| **2021** | Member in Anti-ragging squad in Pt. Deendayal Upadhyaya, National Institute for Persons with Physical Disability (Divyangjan), Delhi University |
| **2019- 2020** | Member in Admission committee for session 2019-20, Pt. Deendayal Upadhyaya, National Institute for Persons with Physical Disability (Divyangjan), Delhi University |
| **Since 2019** | Member of Artificial Limbs, Rehabilitation Appliances and Equipment for the Disabled Sectional Committee, MHD 09, Bureau of Indian Standards (BIS). |

## Statistical software skills and equipment

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| **Software** | MATLAB, SPSS, CAD-CAM, MS office |
| **Equipment** | Gait Lab, EMG sensor, force sensor, FSR |

## Research Interests

Biomechanics of human body, Prosthetic feedback, Prosthetic and Orthotic device, Gait analysis, Biomechanical effect of Prosthetic and Orthotic devices, Prosthetic alignment and socket design, wearable sensors in clinical practice, musculoskeletal changes in individuals with limb loss.

## Teaching Interests

Subject of Biomechanics, Spinal Orthotics, Gait analysis, Orthotics and Prosthetics, Biomechanics of Orthotics and Prosthetics, Pathological gait, tools and equipment of Orthotics and Prosthetics.

## Quality concern

Analytical, Dedicated, Problem Solving skills, Good Understanding, Good Positive attitude, Hardworking and Punctual about work, research-oriented.

## Personal Information

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| **Date of Birth** | **:** | 01st JAN 1986 |
| **Gender** | **:** | Male |
| **Marital Status** | **:** | Married |