



MGM INSTITUTE OF HEALTH SCIENCES

(Deemed to be University u/s 3 of UGC Act, 1956)

Grade 'A' Accredited by NAAC

MGM SCHOOL OF PHYSIOTHERAPY

Sector-1, Kamothe, Navi Mumbai – 410209

APPLICATION FOR SEED MONEY/RESEARCH GRANT

Date: 11th March 2022

Name of Principal Investigator: Dr Rajani Mullerpatan

Name of co-investigator/s : Dr. Bela Agarwal, Girish Nehete, Dr Triveni Shetty

Title of the project: Biomechanical and Biochemical Exploration of Yoga in Low Back Pain

Name of Department : MGM Centre of Human Movement Science, MGM School of Physiotherapy

Name of the Institution: MGM Institute of Health Sciences, NM

Designation: Professor- Director

E-mail address: rajani.kanade@gmail.com

Mobile : 9920048476

List of important publications of last 5 years of the all the investigators in the relevant fields

1. Bagwe H, Agarwal BM, **Mullerpatan R**. Evaluation and Physiotherapy Management of Diaphragm Dysfunction in Patients Admitted to the Medical Critical Care Unit: A Review of the Literature. *Critical ReviewsTM in Physical and Rehabilitation Medicine*. 2022;34(4). Pg.no: 39-62
2. **Mullerpatan R**, Waingankar P, Parab S, Agarwal B, Nagrale O, Dalvi S. Pilot implementation of rural rehabilitation services, India. *Bulletin of the World Health Organization*. 2022 Nov 1;100(11): pg.no:662-8.
3. Khan L, Shetty M, Kherada S, Kava R, Kazi M, Walankar P, **Mullerpatan R**. Dough kneading exposure at the kitchen workstation: Influence on handgrip strength and implications for therapy in hand rehabilitation. *Work*. (Preprint):1-6.
4. Bagwe H, Agarwal B, **Mullerpatan R**. Evaluation and physiotherapy management of diaphragm dysfunction in medical critical care unit. *Critical ReviewsTM in Physical and Rehabilitation Medicine*.
5. Costanzo G, Misaggi B, Ricciardi L, AlEissa SI, Tamai K, Alhelal F, Alqahtani Y, Alsobayel HI, Arand M, Balsano M, Blatter TR. *SPINE20 recommendations 2021: spine care for people's health and prosperity*. *European Spine Journal*. 2022 Apr 7:1-0.



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6. **Mullerpatan RP**, Bharnuke JK. Differences in Foot Characteristics Between Bharatanatyam Dancers and Age-Matched Non-Dancers. *Medical Problems of Performing Artists*. 2022 Mar 1;37(1):53-7.
7. **Mullerpatan RP**. National Education Policy 2020: Call for reconfiguration of physiotherapy education and research in India. *Journal of Society of Indian Physiotherapists*. 2022 Jan 1;6(1):1.
8. Agarwal BM, Yadav RP, Tambe SD, Kulkarni CC, **Mullerpatan RP**. Evaluation of Early Knee Osteoarthritis Using Biomechanical and Biochemical Markers. *Critical Reviews™ in Biomedical Engineering*. 2021;49(6).
9. Desai P, **Mullerpatan R**. Functioning of Older adults in Low-Middle Income Countries: A Literature Review. *Critical Reviews™ in Physical and Rehabilitation Medicine*.
10. Patel G, **Mullerpatan R**, Agarwal B, Shetty T, Ojha R, Shaikh-Mohammed J, Sujatha S. Validation of wearable inertial sensor-based gait analysis system for measurement of spatiotemporal parameters and lower extremity joint kinematics in sagittal plane. *Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine*. 2022 Jan 8:09544119211072971.
11. Vaidya SS, Agarwal B, Singh Y, **Mullerpatan R**. Effect of Yoga on Performance and Physical Fitness in Cricket Bowlers. *International Journal of Yoga Therapy*. 2021;31(1): Article-10.
12. **Rajani P Mullerpatan**, Bela M Agarwal, Triveni V Shetty. Exploration of muscle activity using surface electromyography while performing Suryanamaskar. *International Journal of Yoga*; 2020 13 (2): 137-143.
13. **Mullerpatan R**, Nahar S, Singh Y, Cote P, Nordin M. Burden of spine pain among rural and tribal populations in Raigad District of Maharashtra State of India. *European Spine Journal*. 2020 Sep 10:1-7.
14. Mohanty T, Mehta D, **Mullerpatan R**, Agarwal B. Cardiorespiratory Endurance, Flexibility and Lower-Extremity Muscle Strength in Children and Adolescents with Cerebral Palsy. *Critical Reviews™ in Physical and Rehabilitation Medicine*. 2020;32(2)
15. Bharnuke JK, **Mullerpatan RP**, Hiller C. Evaluation of Standing Balance Performance in Indian Classical Dancers. *Journal of Dance Medicine & Science*. 2020 Mar 15;24(1):19-23.
16. Preface: Rehabilitation with a Focus on Pathologies that Significantly Impact the Quality of Life. Mullerpatan R, Kamath MV. *Critical Reviews™ in Physical and Rehabilitation Medicine*. 2019;31(4).



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17. Shetty M, Balasundaran S, **Mullerpatan R**. Grip and pinch strength: Reference values for children and adolescents from India. *Journal of pediatric rehabilitation medicine*. 2019 Jan 1;12(3):255-62
18. **Mullerpatan R**, Shetty T, Ganesan S, Johari A. Review of lower extremity function following SEMLS in children with cerebral palsy. *Critical Reviews™ in Physical and Rehabilitation Medicine*. 2019;31(2)
19. **Mullerpatan R**, Girdhar P, Singh Y, Salgotra KR, Wilkey A, Nordin M. Evidence-Based Rehabilitation of Spine-Pain Disorders among Underserved Individuals in Navi Mumbai, India: A Two-Year– Observational Report. *Critical Reviews™ in Physical and Rehabilitation Medicine*. 2019;31(2).
20. **Mullerpatan R**, Sonkhia M, Thomas B, Mishra S, Gupta A, Agarwal B. Review of Contextual Factors Influencing Function Following Lower Extremity Amputation in Low to Middle Income Countries. *Crit Rev PhysRehabil Med*. 2019;31(2)
21. Shah T, Shetty M, Bose M, **Mullerpatan R**. A Study of Fine and Manual Hand Dexterity in People with Parkinson's disease. *Critical Reviews™ in Physical and Rehabilitation Medicine*. 2019;31(1)
22. **Mullerpatan R**, Bharnuke J, Hiller C. Gait kinematics of Bharatanatyam dancers with and without low back pain. *Critical Reviews™ in Physical and Rehabilitation Medicine*. 2019;31(1)
23. Agarwal B, Advani M, van Deursen R, **Mullerpatan R**. Influence of varying squat exposure on knee pain and function among people with knee osteoarthritis. *Critical Reviews™ in Physical and Rehabilitation Medicine*. 2019;31(1)
24. Nair S, Agarwal B, Chatla J, **Mullerpatan R**. Health-related physical fitness of people with type 2 diabetes mellitus. *Critical Reviews™ in Physical and Rehabilitation Medicine*. 2019;31(1)
25. Naryanan G, Bose M, Parab S, Agarwal B, **Mullerpatan R**. Energy expenditure using three different walking techniques in individuals with spinal cord Injury. *Crit Rev Phys Rehab Med*. 2019;31(1):35-41
26. Amberkar O, Agarwal B, Singh Y, Shete R, **Mullerpatan R**. Level of sports participation and performance among people with spinal cord injury. *Critical Reviews™ in Physical and Rehabilitation Medicine*. 2019;31(1)
27. Shetty T, Johari A, Ganesan S, **Mullerpatan R**. Gait Deviation Index of Children with Cerebral Palsy with Severe Gait Impairment. *Critical Reviews™ in Physical and Rehabilitation Medicine*. 2019;31(1)



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28. **Mullerpatan R**, Thanawala M, Agarwal B, Ganesan S. Development of the Deep Squat Milestone in Typically Developing Children. *Critical Reviews™ in Physical and Rehabilitation Medicine*. 2019;31(1)
29. Shetty T, Parab S, Ganesan S, Agarwal B, **Mullerpatan R**. Lower extremity muscle strength and endurance in ambulatory children with cerebral palsy. *Critical Reviews™ in Physical and Rehabilitation Medicine*. 2019;31(1)
30. Iyer P, Shetty T, Ganesan S, Nair S, Rao N, **Mullerpatan R**. Exploration of sports participation in children with mild intellectual disability. *Critical Reviews™ in Physical and Rehabilitation Medicine*. 2019;31(1)
31. Agarwal B, Advani M, van Deursen R, **Mullerpatan R**. Influence of varying squat exposure on knee pain and function among people with knee osteoarthritis. *Critical Reviews™ in Physical and Rehabilitation Medicine*. 2019;31(1)
32. Pisal A, Agarwal B, **Mullerpatan R**. Evaluation of Daily Walking Activity in Patients with Parkinson Disease. *Critical Reviews™ in Physical and Rehabilitation Medicine*. 2018;30(3)
33. Johnson CD, Haldeman S, Nordin M, Chou R, Côté P, Hurwitz EL, Green BN, Kopansky-Giles D, Randhawa K, Cedraschi C, Ameis A, **Mullerpatan R**. The Global Spine Care Initiative: methodology, contributors, and disclosures. *European Spine Journal*. 2018 Sep 1;27(6):786-95
34. Nordin M, Randhawa K, Torres P, Yu H, Haldeman S, Côté P, Torres C, Modic M, **Mullerpatan R**, Cedraschi C, Chou R. The Global Spine Care Initiative: a systematic review for the assessment of spine-related complaints in populations with limited resources and in low-and middle-income communities. *European Spine Journal*. 2018 Sep 1;27(6):816-27
35. Haldeman S, Johnson CD, Chou R, Nordin M, Côté P, Hurwitz EL, Green BN, Kopansky-Giles D, Cedraschi C, Aartun E, **Mullerpatan R**, Acaroğlu E. The Global Spine Care Initiative: classification system for spine-related concerns. *European Spine Journal*. 2018 Sep 1;27(6):889- 900
36. Haldeman S, Johnson CD, Chou R, Nordin M, Côté P, Hurwitz EL, Green BN, Cedraschi C, Acaroğlu E, **Mullerpatan R**, Kopansky-Giles D, Ameis A. The Global Spine Care Initiative: care pathway for people with spine-related concerns. *European Spine Journal*. 2018 Sep 1;27(6):901-14
37. Kopansky-Giles D, Johnson CD, Haldeman S, Chou R, Côté P, Green BN, Nordin M, Acaroğlu E, Ameis A, Cedraschi C, **Mullerpatan R**, Hurwitz EL. The Global Spine Care



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Initiative: resources to implement a spine care program. *European Spine Journal*. 2018 Sep 1;27(6):915-24

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39. Wani SK, **Mullerpatan R**. Prevalence of shoulder dysfunction among Indian people with type II diabetes. *International Journal of Diabetes in Developing Countries*. 2015 Sep 1;35(3):386
40. Nair SP, Kotian S, Hiller C, **Mullerpatan R**. Survey of musculoskeletal disorders among Indian dancers in Mumbai and Mangalore. *Journal of Dance Medicine & Science*. 2018 Jun 15;22(2):67- 74.
41. Fernandes N, Gaikwad S, Hemmerich A, **Mullerpatan R**, Agarwal B. Birthing experience of women who have undergone normal delivery in selected community of India. *International Journal of Innovative, Knowledge Concepts*. 2018
42. Gupte S, **Mullerpatan R**, Ganesan S. Influence of Focus of Attention During Acquisition of Motor Skills in Children of 3–9 Years. *Critical Reviews™ in Physical and Rehabilitation Medicine*. 2018;30(1)
43. Agarwal BM, Deursen RV, **Mullerpatan RP**. Influence of habitual deep squatting on kinematics of lower extremity, pelvis and trunk. *Int J Health Rehabil Sci*. 2018;7(1):1-9
44. Agarwal B, Mukri A, Shah M, Ganesan SL, **Mullerpatan R**. Effect of Inspiratory Muscle Training in Individuals with Parkinson's Disorder. *Int J Health Sci Res*. 2017;7(6):178-85
45. Sahasrabudhe SS, Agarwal BM, **Mullerpatan RP**. Comparison of muscle activity and energy cost between various bodyweight squat positions. *Clinical Kinesiology: Journal of the American Kinesiotherapy Association*. 2017 Jun 22;71(2):19-25
46. Rane SS, Paul A, **Mullerpatan RP**. Reference values of manual dexterity using Minnesota Rate of Manipulation Test for Indian adults. *Hand Therapy*. 2017 Jun;22(2):79-85



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Duration of the project: 36 months

Approval from Scientific Advisory Committee Yes

Ethics Committee Clearance Yes

Budget requirements (as per the format as **Annexure 1B**)

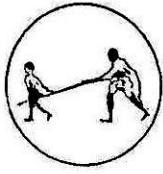
	Year I	Year II	Total (INR)
Recurring			
a. Consumables	5000.00	5000.00	10,000.00
b. Travel	-	-	-
c. Contingency	-	-	-
Non-recurring	4000.00*12	-	48000.00
	53,000.00	5000.00	58000.00

Signature
Principal Investigator

Signature
Co-Investigator

Signature
Head of Department





MAHATMA GANDHI MISSION'S DENTAL COLLEGE & HOSPITAL
INSTITUTIONAL ETHICS COMMITTEE
Junction of NH-4 and Sion Panvel Expressway,
Sector-1, Kamothe, Navi Mumbai- 410 209
E-Mail ID :iercmgmdch@gmail.com

MGM/DCH/ IEC / 001 / 22

Date: - 11 / 3 / 2022

To,
Dr. Rajani Mullerpatan
Faculty,
MGM School of Physiotherapy,
Kamothe, Navi Mumbai

Reference:

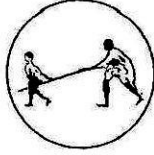
1. Your submission of study protocol
2. Study Title: "biomechanical and biochemical exploration of effect of Yoga in low back pain – an experimental study"
3. IEC-MGMDCH reference no. **MGM/DCH/IEC/001/22**

Dear Dr. Rajani Mullerpatan

The IEC- MGMDCH has received and reviewed your submission

Following documents were reviewed in the meeting held on date 21/1/2022

1. Application to IERC MGMDCH dt. **24/9/21**
2. Summary of research protocol
3. Research protocol (Version ..., dt. **24/9/2021**)
4. Amendments to research protocol (No 4 Dt. //2022) **NA**
5. Informed consent document (ICD) in English (Versiondt. **24/9/2021**)
6. ICD in Hindi language translated from English (Version dt. **24/9/2021**)
7. ICD in Marathi language translated from English (Versiondt. **24/9/2021**)
8. Back translations of ICD from Hindi to English (Versiondt. **24/9/2021**)
9. Back translations of ICD from Marathi to English (Versiondt. **24/9/2021**)
10. Amendments to the ICD (Version, dt. /...../2022) **NA**
11. Case Record Form (CRF) / Study Questionnaire / Study Proforma **✓**
12. Principal investigators Current Curriculum Vitae (signed and dated) **✓**
13. Subject recruitment procedures: advertisement, letters to doctors, notices **NA**
14. Investigator Brochure (IB) – applicable for investigational new drugs (IND) **NA**
15. Ethics Committee clearance of other study centers (Total No.) **NA**
16. Insurance policy if any **NA**
17. Drugs Controller General (India) [DCG(I)] clearance if applicable **NA**
18. Investigator's undertaking to DCG(I) if applicable **NA**
19. Health Ministry Screening Committee (HMSC) approval if applicable **NA**
20. Bhabha Atomic Research Centre (BARC) approval if applicable **NA**
21. Genetic Engineering Advisory Committee (GEAC) approval if applicable **NA**
22. Director General of Foreign Trade (DGFT) approval if applicable **NA**
23. FDA marketing/manufacturing license for herbal drugs. if applicable **NA**
24. Other Documents (specify)



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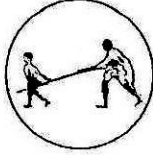
Date: - 11 / 3 / 2022

The following members of the Ethics committee discussed the study documents and voted at the meeting:

Sr.	Name	Role and Responsibility
1.	Dr. Deepak Langade	Chairman, Scientific
2.	Dr. Prakash Khandelwal	Co-chairperson
3.	Dr. Shilpa Patel	Member Secretary
4.	Adv. Dr. Sheela Hosamani	Legal Expert
5.	Mrs. Sabitha Praveen	Biostatistician
6.	Dr. Usha Asnani	Clinician
7.	Dr. Ravindranath VK	Clinician
8.	Dr. Sumanthini MV	Scientific Member
9.	Dr. Ashvini Padhye	Scientific Member
10.	Dr. Jyoti Nadgere	Scientific Member
11.	Dr. Rajesh Goel	Scientific Member
12.	Ms. Nithya Eldho Varghese	Lay person
13.	Mrs Rupali Gujar	Social worker

DECISION *approved*

Page No.2



MAHATMA GANDHI MISSION'S DENTAL COLLEGE & HOSPITAL
INSTITUTIONAL ETHICS COMMITTEE
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Date: - 11 / 3 / 2022

Based on the discussion of the submitted documents for the scientific and ethical review, we approve the research protocol to be conducted and its presented form subject to the following conditions:

1. Applicable and mandatory regulatory permissions to be obtained prior to commencement of the study i.e. registration at clinical trial registry of India. (www.ctri.nic.in)
2. The investigators and other participants should be adequately trained on the protocol and its related procedures, the Good Clinical Practices (GCP) guidelines prior to commencing the study.
3. Participating subjects should be adequately enlightened about the protocol during informed consent process and under insurance coverage in an event of any trial related injury/accident.
4. Participating subjects should not be put to additional financial burden related to the study protocol.

The validity of this approval is for two years from date of approval. Within this period, the Institutional Ethics Committee expects to be periodically informed about the following:

- The progress of the study
- Any Serious Adverse Event (SAE) occurring in the course of the study
- Any significant changes in the protocol/patient information/ informed consent
- Update on safety of the investigating product or procedure

To provide an abridge copy of the final report after completion of the study.

Thanking You,

Yours Sincerely


Dr. Shilpa Patel
Member Secretary