Economically Developing Countries (EDC) Project
Memorandum of Understanding

Please note this document contains guidelines and examples to assist you when filling in each section. The instructions (highlighted in blue italics) should be deleted when completing this application form.

Declaration by the International Society of Biomechanics (ISB):

The ISB is dedicated to supporting international initiatives that will promote research, education, and the provision of healthcare in the field of biomechanics. The objectives of the ISB, with regards to the advocacy of projects in EDC regions, include the following:

- To make the Society truly international.
- To help develop skills of, and/or opportunities for, clinicians and researchers in EDC who do not have the resources available to do so on their own.
- To provide collaborative learning opportunities for students and researchers in developed countries to help them understand the challenges faced in the developing world.
- To enable donating organizations to do something beneficial with equipment that is no longer needed by them.
- To help provide a sustainable initiative that will allow biomechanics skills and knowledge to flourish in developing regions.
- To enable clinicians and researchers in developing countries to solve biomechanics-related problems specific to their own region.

The ISB would like to ensure the long-term sustainability and overall success of all EDC projects. As such, all participants must be clear on the objectives of the EDC participating organization(s) and the supporting organization(s), in addition to the outcomes each party wishes to achieve. This Memorandum of Understanding is intended to help clarify this for all participants. It is also the framework by which the ISB will evaluate the success of the project in the short and long-term and to find out whether the expected outcomes have been achieved, thereby enabling improvement of this process for future projects.

Participants:

Please list all organizations involved in this project (include those that are supporting the EDC participant by way of equipment donations, technical or financial support, or other resources) and their primary contacts.

	Name of Organization	EDC Participant OR	Supporting Organization	Primary Contact(s)	ISB Member Number*	E-mail
1.	***MGM School of Physiotherapy***	☒	☐	*Dr. Rajani Mullerpatan*	*5043*	*rajani.kanade@gmail.com*
2.	***Indian Institute of Technology, Mumbai***	☐	☒	*Prof. B. Ravi* *Mr. Rupesh Ghyar*	*N/A* *In progress*	*b.ravi@iitb.ac.in*
3.	***Cardiff University***	☐	☒	*Prof. Robert van Deursen*	*1974*	*vandeursenR@cardiff.ac.uk*
4.	***International Society of Biomechanics (ISB)***	☐	☒	*John Challis*	*1192*	*jhc10@psu.edu*

* A minimum of one primary contact from each organization must be a member of the ISB.

Project Proposal:

To be completed by **the EDC participant**:

1. What is the **overall mission of your organization** *(e.g. to improve the independence and wellbeing of physically disabled people...)* **and how does this project help to support it?**

The overall mission of MGMIHS is to provide healthcare services, research and higher education particularly in the area of medicine, nursing, physiotherapy and health management. Within physiotherapy/rehabilitation, training and research in the area of Biomechanics is essential to help maximize functional independence of people with physical impairments resulting from a wide spectrum of conditions i.e. repetitive stress, congenital, developmental and degenerative conditions precipitated by traumatic, vascular and pathologic origin. Precise and complete kinesiological assessment of such conditions will guide clinical decision making for accurate conservative, surgical, prosthetic/orthotic and ergonomic management for maximal functional outcome.

2. What is the primary strategic objective(s) of this project? [Please specify details about one or more of the areas listed below. In formulating your objectives, consider specific results you would like to achieve.]

   a. Teaching/educational programs:

   - To design and seek approval for a postgraduate degree course in Biomechanics designed at a level of global merit (to enable qualified postgraduates to participate in projects conducted worldwide) and local value to meet specific functional needs of our population emerging from a lifestyle influenced by exclusive Indian culture far different from Western lifestyle.
   - Establish training for students from various disciplines such as Physiotherapy, Bio-engineering, Mechanical engineering, Prosthetics - Orthotics and Orthopedics at graduate, postgraduate and PhD level.
   - Enhance skills in clinical biomechanics of faculty members of MGMSOP

   b. Research programs:

   - Produce high end research in the area of human movement science related to clinical questions; to offer health care solutions global in nature and specific to the Indian population.

   c. Clinical assessment – diagnosis and treatment:

   - Provide precise and complete kinesiological assessment of congenital, developmental and degenerative conditions precipitated by traumatic, vascular and pathologic origin which will guide clinical decision making for accurate conservative, surgical, prosthetic/orthotic and ergonomic management.

   d. Other (please specify):

   (Include additional lines if necessary)

3. **What initiatives/actions (project design and/or management strategies) will be implemented to achieve the results outlined in Question 2?**

a) Teaching/Educational programs:

- Curriculum for postgraduate course in Biomechanics will be designed and sought approval from MGMIHS and IIT Mumbai.

RM Vilegaonkar

- A circular will be sent to Bio-engineering, Mechanical Engineering, Prosthetics and Orthotics and Orthopedics departments within the above mentioned Institutes to inform students from respective disciplines training schedule in biomechanics.
- Training will be imparted to faculty members in form of continuing professional development.

b) Research programs:

- Collaborative research projects between the 3 organizations will be developed to produce high end research studies encompassing fundamental and clinical biomechanics. PhD students will be appointed on appropriate research projects. Broad areas of research are-

  i. Barefoot walking and the risk of plantar ulceration (in collaboration with IIT Mumbai, Cardiff University)

  ii. Foot and knee instability and the development of OA (in collaboration with Cardiff University and the University of Sydney)

  iii. Yoga postures and their effect on the musculoskeletal system (in collaboration with IIT Mumbai and Cardiff University)

c) Clinical assessment –

- Diagnosis and treatment: Information pertaining to available clinical biomechanical evaluation tools will be circulated to various departments within and outside the hospital within Mumbai and Navi Mumbai. Referred patients will be assessed using biomechanical tools to arrive at precise measurement of impairments. Income generated through such services will be used for financial viability of the center. Expenses incurred for annual maintenance of laboratory equipment will be covered partly from the income generated by the center and partly from the funding acquired for research projects.

4. Who will benefit from this project? *(e.g. Students, patients, etc)*

- Undergraduate and postgraduate students from Physiotherapy, Bio- engineering, Mechanical Engineering, Prosthetics and Orthotics and Orthopedics department will benefit from training. Training will be imparted to students within India and across continents. Every effort will be made to enroll students from within India and countries abroad.
- Faculty members from MGMIHS will benefit from skill development in clinical biomechanics
- A Biomechanics Center with expert input from biomechanics specialists worldwide operated in India will offer global merit training at subsidized cost thereby making it affordable for students from several developing countries.
- Patients with congenital, developmental and degenerative conditions of traumatic, vascular and pathologic origin will benefit from biomechanical evaluation.

5. What are the expected benefits for each group listed in Question 4? *(e.g. Exposure to state-of-the-art methods of...)*

- Students will be exposed to globally used state-of-the-art valid and reliable methods used for biomechanical studiessuch as quantitative movement analysis and plantar pressure measurement. They will receive hands-on training and have opportunities to use various biomechanical tools to conduct research in biomechanics. Such training of global merit will be available at affordable cost to students from developing countries.
- Patients will benefit from precise and complete kinesiological assessment which will guide clinical decision making for accurate conservative, surgical, prosthetic/orthotic and ergonomic management.
- Faculty members will benefit from acquiring skills for biomechanical evaluation which will be applied in both clinical practice and student training.
- The biomechanics center will benefit from financial viability through the above mentioned expected benefits.

6. Please list proposed milestones – associated with the actions, individuals, and benefits given in Questions 3, 4, and 5, respectively – together with a timeline of events. Milestones should include specific outcomes that the collaborators wish to achieve.

Key Milestones	Time period
1. Establish Biomechanics Center: installation of equipment and pilot start	*December 2013*
2. Collaborative research projects	*Already started. Ongoing*
3. Design the curriculum for Masters degree course in Biomechanics and seek approval from the above mentioned contributing organizations	*September 2014*
4. Commence the course in clinical biomechanics	*January 2015*
5. Commencement of clinical service to patients	*March 2014 onwards*

7. What other authority/administrative body, such as government or college administration officials, must approve this initiative to ensure resources are allocated to the intended recipients? Has approval already been sought *(please provide evidence of any approvals)*?

- Administrative/competent authorities of 3 above mentioned institutes have approved development of the research activities proposed at MGM Center for Biomechanics.
- Additionally, approval will be sought for curriculum for Masters Course in Biomechanics by University Grant Commission, India and Academic Council of MGMIHS.
- The opportunity to develop and approve transnational education in association with Cardiff University will be investigated.

8. What commitments will your organization make to ensure:
   a. Recognition of contributions provided by supporting organizations? *(e.g. Website acknowledgment, progress reports)*

- Publications and patents arising out of collaborative projects with Cardiff University and IIT Bombay will be shared by all 3 above mentioned organizations.
- MGMIHS will acknowledge the support and contribution provided by IIT

RMullerpatan

Mumbai and Cardiff University on its website.

- Technical support provided by IIT Bombay will be acknowledged in relevant presentations and publications.
- Secondly, IIT Bombay will have an opportunity to conduct clinical trials at MGM Center for Biomechanics in collaboration with host organization which will be acknowledged in related reports.
- MGMIHS will acknowledge the support and contribution provided by IIT Mumbai, Cardiff University, ISB and AMTI on its website and in relevant publications
- MGMIHS will provide agreed upon (to be decided) educational materials to ISB to further share with ISB members in support to the EDC educational program
- MGMIHS will provide a brief "Project History" for the ISB website

b. Long-term sustainability of the project (including personnel required to ensure continuation of project into the future)? *(e.g. Staff training, technical support, security and maintenance, etc)*

- The host organization i.e. MGM Center for Biomechanics will provide ongoing security and maintenance of equipment.
- Technical guidance for equipment selection and experimental data analysis will be provided by II Bombay. The equipment maintenance will be sought via annual maintenance contract from the respective vendors.
- Staff training will continue as an ongoing process which will be partially supported by MGM Center for Biomechanics.
- Any agreed joint transnational education programs would facilitate staff development.
- Income generated through clinical services will aid financial viability of MGM Center for Biomechanics. For e.g. annual maintenance of equipment and expenses incurred towards consumables.
- Income generated through tuition fees for Masters Course in Biomechanics and PhD program will partially support salary of some staff members.
- Income generated through any agreed joint initiatives would be negotiated as appropriate.
- PhD students will be recruited as research assistants on certain projects.

Supporting Organizations – Commitments and Anticipated Benefits:

What contributions will be made by the supporting organizations? Please list all support that each participant has agreed to provide *(e.g. financial, in-kind, training, etc)*, the period over which they have committed this support, estimated costs for the organization, and how they will benefit *(e.g. publicity)*.

Organization	Commitments	Duration	Estimated Costs	Objectives/Benefits
MGMIHS	*Allotted infrastructure for Biomechanics Center*	*Ongoing*	*Approx 1 million USD*	*Supports objectives outlined on pg 1.*
	Allotted one competent Professor	*Ongoing*	*Salary is paid by MGMSOP (15,000 USD)*	
	Will recruit one research assistant & one laboratory technician	*Ongoing*	*Salary will be paid by MGMIHS (6000 USD)*	
	Already purchased some equipment such as emed pressure platform, activity monitoring system, Silicon coach etc.			
	Staff training	*2 weeks*		
Cardiff University	*Send Prof. van Deursen for 4-visits*	*4 visits:* *Nov 2013* *May 2014* *Nov 2014* *May 2015*	*Covered by ISB*	*Collaborative Research projects.* *Biomechanics lab design, installation of equipment.* *Provide expertise in curriculum design related to clinical biomechanics.*
IIT Bombay	*Technical guidance and collaborative research projects*	*ongoing*		*Using the MGMIHS Biomechanics lab for purpose of clinical testing of the products which are developed by IIT Bombay.*
ISB	*Financial support to send Prof. van Deursen to MGMIHS*	*4 visits*	*7,503 USD*	*Supports objectives outlined on pg 1; acknowledgment in appropriate media; support for development of EDC educational material.*
	Coordinate donation of two second-hand, re-calibrated force platforms from AMTI with technical support for 5 years	*As soon as available*	*Approx. 30,000 USD*	*AMTI acknowledgment in appropriate.* *MGMIHS and ISB media will strengthen relationship with AMTI.*

Budget

Before any project can be endorsed by the ISB, a detailed budget for all costs involved for each participating organization must be approved by the ISB President, EDC Project Officer, and ISB Treasurer. In the budget, please consider monetary costs involved in establishing/initiating the project plus ongoing costs to ensure the project is sustainable. Please include the budget as a separate document.

Signatures of primary contact from each participating organization:

Name (please print)	Signature	Date
Dr. Rajani Mullerpatan	RMullerpatan	25 July 2013
Prof. B. Ravi		1 August 2013
Prof. Robert van Deursen		9 August 2013
Prof. John Challis		22nd Oct. 2013.

(Include additional lines if necessary)

RMullerpatan