



How to Use the Online Abstract Submission System for 8th World Congress of Biomechanics

Important Information

- Abstracts are submitted via an online submission system. Register with the [abstract submission website](#) and establish your user name and password.
- If you are submitting more than one abstract you **must** use the same login for each abstract.
- Please note that at least one author **must** register in full to attend and present the abstract at the Congress and that an author **must not** present more than two presentations (either oral or poster).
- You can alter your abstract at any time up to the submission deadline of **19th December 2017**.
- Abstracts will be reviewed and any abstract that was submitted for oral presentation, but was unsuccessful in that regard, will be considered for poster presentation.
- The maximum length of an abstract is **450 words**.
- Do not include author names in the title or body of your abstract – these are entered online during the submission process.

1. The Submission Process

Submitting an abstract is a **3-step process**. We strongly recommend that you complete your submission at one time.

Step 1: Register on the abstract submission system

For the 8th World Congress of Biomechanics we are using a dedicated website for abstract submission. You must first register on the abstract submission system at <https://app.oxfordabstracts.com/events/123/submission>

Welcome.

You will need to login / register first

Sign in here to manage your account or [Register a New Account](#)

Email address

Password

[Forgotten my password](#)

This information will be used by the event organiser to communicate with you about matters relating to the event. By clicking "Submit", you agree to our [terms of service](#) and [privacy policy](#).

The first time you see this screen, you must register a new account, entering your name and e-mail address. You will also be asked to supply a password for the system.

You only need to register once - each subsequent time that you visit this page, you will log in with your e-mail and chosen password.



Step 2: Submit your abstract

- Log in to the submission system when you have prepared your abstract - enter your email address and the password you chose when you registered.
- Submitting an abstract requires that you complete a questionnaire for each abstract. Some questions are mandatory (marked with an asterisk) and you will not be able to complete your submission until these questions have been answered. You will be required to provide the **names and affiliations of all authors, confirmation that all authors have approved the submission and the category and subcategory to which you are submitting your abstract**. You will also be able to indicate your preferred mode of presentation.
- **It is strongly recommended that you complete your submission once started. However, if you decide to start your submission for completion at a later point, you must ensure to “Submit” your incomplete abstract. It will then be available for you to finish at a later stage. Failure to “Submit” your incomplete abstract will result in it being lost and you will have to start again.**



8th World Congress of Biomechanics

Welcome to the abstract submission system for the 8th World Congress on Biomechanics.

The deadline for abstract submissions is **December 19th 2017**. Detailed instructions for submitting your abstract, together with a sample abstract, are available [here](#).

If you wish to apply for an award / bursary, all details are available [here](#).

We look forward to receiving your submission.

* - indicates field is mandatory

Title *

Enter the full title of your submission using sentence case i.e. only capitalise the first letter of the first word and any proper nouns in the title). This will be used for printing in the final programme.

Edit ▾

↶ ↷ *I* ×₂ ×² Ω

Please enter the title of your abstract in sentence case. The maximum title length is 50 words.

Words: 17

Word Limit: 50

The links to this document and to the award/bursary section of the website are in the Welcome note.

Mandatory questions are marked with an asterisk (*) and must be answered. Your submission will not be complete if a mandatory question is left unanswered. Incomplete submissions will not go for review.

Please enter the title of your abstract (**maximum length of 50 words**) – do NOT include author names or affiliations in the title.

If you exceed the word count, your submission will be marked as incomplete in our system. Incomplete submissions will not go for review.



Abstract *

Please enter an abstract of your paper (maximum 450 words).
Do not include author names and affiliations.

Edit ▾

↶ ↷ I B ×₂ ×² Ω ☰ ↻ 🔗

Enter the text of your abstract (maximum of 450 words). Do not include author names and affiliations.

You may also include one figure (using copy and paste functionality, with image compressed to 150ppi) and the following subsections are recommended.

- Introduction**
- Methods**
- Results**
- Discussion**
- Acknowledgements**
- References**

Words: 45

Word Limit: 450

Please enter the abstract of your paper, **(maximum length of 450 words)** – do NOT include any author names or affiliations as these are added at a later point. **If you exceed the word count, your submission will be marked as incomplete in our system. Incomplete submissions will not go for review.**

Note: One figure can be included in your abstract – use the copy and paste functionality to add the figure. The resolution of the figure must have a maximum of 150 ppi.

Author Approval *

I confirm that this submission has been approved by all authors

You must also indicate that all authors have approved the submission.

Affiliations and Authors

You MUST enter the names of ALL authors here - including yourself if you are an author - in the order in which you wish them to appear in the printed text. Names omitted here will NOT be printed in the author index or the final programme.

Author 1 Remove Author

Title	First Name (Required)	Last Name (Required)
Dr.	A.N.	Other

Presenting

Please give the names and affiliations for all authors. Each author can have up to 3 affiliations.

You must also indicate who the presenting author will be.

Once you have entered the details or the first author, you can add another author, if needed.

Author 1 Affiliations

Affiliation 1 Remove Affiliation

Institution	City	Country
RCSI	Dublin	Ireland ▾

+ Add Affiliation

Add Another Author



Presenting Author E-mail

Please supply the e-mail address of the presenting author

You must supply the e-mail address of the presenting author.

Categories *

Please choose the category and subcategory which best describe your submission.

Choose here ▼

- Choose here
- Biomedical Engineering education
- Biofluid and transport
- Cardiovascular
- Cell biomechanics
- Emerging areas**
- Imaging and device biomechanics
- Locomotion and human movement
- Molecular biomechanics
- Multiscale biomechanics
- Musculoskeletal
- Organ biomechanics
- Sport biomechanics, injury and rehabilitation
- Tissue biomechanics
- Tissue engineering
- Plenary session
- Society session

Please indicate to which category (congress track) and subcategory (session) you are submitting your abstract. Please note that there are drop-down menus for both category and subcategory.

Choose here ▼

- Advanced bioimaging
- Bioloocomotion and flows
- Biomechanics in nature I: a tribute to Professor R. McNeill Alexander
- Biomechanics in nature II: a tribute to Professor R. McNeill Alexander
- Biomechanics of soft tissue by Elastography (MRI, US)
- Biomechanics of the Central Nervous System
- Computational challenges in multiscale modelling in biomechanics
- Computer models of growth and remodelling
- Coupled multi-organ modelling of the cardiopulmonary system
- Dynamic medical imaging techniques for biomechanics systems
- Forensic biomechanics
- Integrated approaches for reproductive biomechanics
- Integration of global health and biomechanics: Addressing the challenges in Africa
- Lung biomechanics
- Mechanobiology of tissue development on a chip**
- Microbial biomechanics
- Modelling uncertainty and propagation of data for biomechanics systems
- Multiscale biomechanics of neurovascular diseases
- Multiscale cancer mechanobiology and biomechanics

Mechanobiology of tissue development on a chip ▼



Invited

Is this an invited talk?

Yes ▼

Please indicate if your talk is an invited talk.

Presenter biography

For Invited Presentations only

Please provide a 3-4 sentence biography exactly how you would like it read for your introduction and printed in the conference program. Your biography is limited to 100 words. Please read your biography aloud once it is written to ensure it can be effortlessly delivered by the session chair.

Edit ▼

← → *I* ×₂ ×₃ Ω

Invited Presentation Only

Please provide a short biography (100 words)

Words: 10

Word Limit: 100

If your presentation is invited, please provide a short biography (maximum of 100 words).

Author will attend *

I confirm that at least one author will register in full to attend and present the paper at the Conference

Permission to publish *

Check this box to give us permission to publish your submission on electronic media (including website and app) and in hardcopy if it is accepted for presentation

Please confirm that at least one author will attend and present at 8th WCB.

You must also confirm that you give permission for your abstract to be published if accepted.

Presentation *

Please choose your preferred means of presentation.

Oral ▼

Choose here

Oral

Poster

Either

Please indicate your preferred presentation type – your options are oral, poster or either.



General Awards and Travel Bursaries

Please check the box(es) to be considered for the general awards and travel bursaries (you may apply for both).

- European Society of Biomechanics (ESB) Clinical Biomechanics Award
- World Council of Biomechanics Travel Award

Student Awards

I wish to be considered for one of the student awards. Details of the awards are available on the congress website.

- European Society of Biomechanics (ESB) Student Award
- European Society of Biomechanics (ESB) Travel Award
- American Society of Mechanical Engineers – Bioengineering Division (ASME-BED) PhD Level Student Paper Competition and Student Travel Bursary
- American Society of Mechanical Engineers – Bioengineering Division (ASME-BED) MS Level Student Paper Competition
- American Society of Mechanical Engineers – Bioengineering Division (ASME-BED) BS Level Student Paper Competition
- American Society of Mechanical Engineers – Bioengineering Division (ASME-BED) Undergraduate Design Competition and Travel Bursary

American Society of Mechanical Engineers – Bioengineering Division (ASME-BED) PhD Level Student Paper Competition and Student Travel Bursary - Technical Area

If you applied for the American Society of Mechanical Engineers – Bioengineering Division (ASME-BED) PhD Level Student Paper Competition and Student Travel Bursary, please indicate the most appropriate technical area for your work.

Upload of Student Award Supporting Document

Please attach the supporting document for your student award application (**single pdf only**). This is essential for many of the awards and your application will not be considered without the supporting document. Please check the details on the congress website.

Max file upload size 10MB

You may also indicate if you wish to apply for a general award or bursary. You may apply for both.

If applicable, you may apply for a student award. Full details of these awards, together with supporting document requirements, are available on the website www.wcb2018.com.

If you apply for the American Society of Mechanical Engineers – Bioengineering Division (ASME-BED) PhD Level Student Paper Competition and Student Travel Bursary, you must indicate the technical area for your work.

Furthermore, if you have applied for a student award, you **must** attach the supporting document (single pdf) for your application where necessary. Details of which awards require detailed supporting documents are available on the congress website.



Student Travel Bursaries

I wish to be considered for one of the student travel bursaries. Details of the travel bursaries are available on the congress website.

- World Council of Biomechanics Student Bursary Awards: Asia/Pacific, Africa, Central and South America
- World Congress of Biomechanics 2018 Student Travel Bursary
- De Luca Foundation 'Motor Control' Student Travel Awards (only for students submitting an abstract to the 'Motor Control' session)

Upload of Student Travel Bursary Supporting Document

Please attach the supporting document for your student travel bursary application (**single pdf only**). This is essential for many of the awards and your application will not be considered without the supporting document. Please check the details on the congress website.

Max file upload size 10MB

Choose File

If applicable, you may apply for a student travel bursary. Full details of these travel bursaries, together with supporting document requirements, are available on the website www.wcb2018.com.

Furthermore, if you have applied for a student travel bursary, you **must** attach the supporting document (single pdf) for your application where necessary. Details of which awards require detailed supporting documents are available on the congress website.

Submit

You must click “Submit” to complete your submission. If you fail to do so, your submission will be lost and you will have to start all over again. You can click “Submit” at any point during the submission process to save your information and return at a later date.

8th World Congress of Biomechanics		New Submission
08-07-2018 - 12-07-2018	Submission Deadline Date: 19-12-2017 Notification Date: 28-02-2018	
1. <u>Title of Abstract</u>		Incomplete
Amend		

If you should stop part way through the process, without pressing submit, your submission will be lost.

However, if you press submit, your submission will be held in the system as an incomplete submission – you must return later and complete all the questions. When you log in again, you can click on your incomplete abstract and resume submission. Any incomplete question will be highlighted with a red border.



Step 3: Confirmation e-mail

You will receive an e-mail confirming that your submission has been received. **If you do not receive an e-mail, it means that your submission is incomplete, i.e. an answer is unfinished or you have exceeded the word limit for the abstract. Incomplete submissions will not go for review.** You **must** log back into the submission system, click on the title of the abstract and complete it. Once complete you will receive the confirmation e-mail.

8th World Congress of Biomechanics		+ New Submission
08-07-2018 - 12-07-2018	Submission Deadline Date: 19-12-2017 Notification Date: 28-02-2018	
<u>1. Title of Abstract</u>		
Amend	Complete	

If you wish to make another submission, please click on New Submission and a new blank submission form will open.

2. Amending a Submission

You may wish to change your submission. You can do this at any time up to the deadline of **19th December 2017**.

- Log in to the abstract submission system.
- You will see the abstract(s) that you have submitted. Click on the abstract title to open the file.
- Amending an abstract is just the same as the original submission process except that the online form will be automatically filled in with the answers that you gave previously. You don't have to change an answer if you don't want to.
- Once you click "Submit", your changes will be saved and you will be sent an email confirming that your abstract has been amended. **Your changes will not be recorded if you fail to click "Submit"**. You will also receive an e-mail confirming that an amendment has been made to your abstract.



3. Congress Topics

Authors are welcome to submit under the following congress topics:

- | | |
|----------------------------------|---|
| Biomedical engineering education | Multiscale biomechanics |
| Biofluid and transport | Musculoskeletal |
| Cardiovascular | Organ biomechanics |
| Cell biomechanics | Society session |
| Emerging areas | Sport biomechanics, injury and rehabilitation |
| Imaging and device biomechanics | Tissue biomechanics |
| Locomotion and human movement | Tissue engineering |
| Molecular biomechanics | |

4. Queries

If you have any queries about the submission process or you want to withdraw an abstract, please contact the congress administrator at abstracts@wcb2018.com



5. Sample Abstract

This is for information only – you must not enter your abstract as below as the abstract system captures the abstract in a series of steps. However, you may use the section headings (Introduction, Methods etc.) and the output will be similar to the following.

Oscillatory fluid shear induces MSC osteogenic lineage commitment in a magnitude and frequency dependent manner

Elena Stavenschi^{1,2}, Marie-Noelle Labour^{1,2}, David A. Hoey^{1,2,3}

¹Trinity Centre for Bioengineering, School of Engineering, Trinity College Dublin, Dublin 2, Ireland

²Department of Mechanical and Manufacturing Engineering, School of Engineering, Trinity College Dublin, Dublin 2, Ireland

³Advanced Materials and Bioengineering Research Centre, Royal College of Surgeons in Ireland and Trinity College Dublin, Dublin, Ireland.

Introduction

During daily ambulation, the skeletal system including the marrow experiences complex mechanical stimuli such as pressure and fluid shear that facilitates bone adaptation to loading [1]. It is currently unclear whether fluid shear predicted to occur within the marrow cavity is sufficient to directly drive osteogenic Mesenchymal Stem Cell (MSC) lineage commitment [2]. Therefore, the objective of this study is to conduct a systematic analysis of oscillatory fluid shear stress magnitude, frequency and duration on early osteogenic responses and to determine whether these mechanical stimuli are sufficient to drive osteogenic lineage commitment.

Methods

MSCs were cultured in standard growth media with minimal osteogenic supplements. Oscillatory fluid shear was applied using a custom built parallel plate flow chamber. The following flow regimes were employed: magnitudes of 1Pa, 2Pa and 5Pa were coupled with frequencies and time of stimulation such as 0.5Hz (2hrs, 4hrs), 1Hz (2hrs) and 2Hz (1hr, 2hrs). Long term flow mechanical stimulation consisted of 2 regimes: 1Pa, 1 Hz (F1Pa) and 2Pa, 2Hz (F2Pa) on Days 1, 2, 4, and 5 for 4 hrs/day followed by 14 days of static culture post flow. mRNA expression was quantified by qRT-PCR. Biochemical composition was evaluated for collagen using PicroSirius Red and Alizarin Red for mineralisation.

Results

Overall, MSCs stimulated with oscillatory fluid shear display positive but variable responses as determined by the upregulation of osteogenic genes Cox2, Runx2 and Opn. Cox2 mRNA expression is upregulated in a magnitude dependent manner as evidenced at 1hr, whereas at 2 hrs the level of upregulation plateaus at magnitudes above 2 Pa (Fig.1A). A positive osteogenic response in terms of Runx2 and OPN mRNA expression is observed, although independent of shear stress magnitude. Runx2 and Opn mRNA expression exhibits an increase with increasing frequency in response to shear stress magnitude above 2Pa. Duration of stimulation does not significantly influence MSC osteogenic responses. Long term fluid flow mechanical stimulation induced an increase in collagen deposition. Enhanced mineralisation is also observed with fluid flow, although a significant increase was only observed for 2Pa, 2Hz regime (Fig1B).

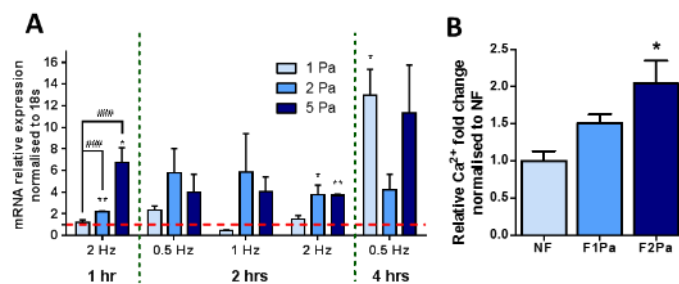


Fig.1: The effect of oscillatory fluid shear (A) magnitude, frequency and duration on Cox2 mRNA expression (short-term) and (B) Calcium deposition (long-term).

Discussion

This systematic study has identified that a regime of 2Pa shear and 2Hz frequency, which is predicted to occur in-vivo, induces the most robust and reliable upregulation in osteogenic gene expression. Furthermore, long-term mechanical stimulation utilising this flow regime, elicits a significant increase in collagen and mineral deposition demonstrating that bone marrow biophysical cues can directly drive MSC osteogenesis.

Acknowledgements

ERC n°336884 and SFI n°SFI/13/ERC/L2864.

References

- Chen, J.C., et al., (2015). *Faseb j*, **30**(4) p1504
- Govey, P.M., et al., (2013). *Curr Osteoporos Rep*, **11**(2) p83