# Intro to InDesign

Computing Club 11/5

**The New York Times**

Clothes washers work near a sewage pipe in the Ganges in Varanasi, India, where no city has a comprehensive treatment system.

## Iran Outlines Nuclear Deal; Accepts Limit

### No Rise in Production for Several Years

By DAVID E. SANGER

## A BOY SET ABLAZE: DETAILS EMERGING IN A REVENGE CASE

### KILLING OF PALESTINIAN

### Shin Bet Says 3 Israeli Jews Spent Hours in Search of Victim

By ISABEL KERSHNER

### Cease-Fire Proposal

## Malnutrition in Well-Fed Children Is Linked to Poor Sanitation

By GARDINER HARRIS

### In India, Exposure to Bacteria Is Seen as Root of Problem

## Seeking Soccer Respect, Qatar Looked Abroad

This article is by Steve Eder, Sam Borden, Christopher Harress and Jack Williams.

Qatari players on the under-16 national team. Qatar, host of the 2022 World Cup, has developed players from other countries.

**SEEDING THE FIELD**
First of two articles.

## Atlantic City Strives to Rise As Casinos Fall

By CHARLES V. BAGLI

### NADINE GORDIMER, 1923-2014

## She Fought Apartheid With Words

By HELEN T. VERONGOS

The novelist in 1990.

Adventure Awaits

The Calling of the Mountains

Mountains are the beginning and the end of all natural scenery.

Explore the unseen

Let's go on a Roadtrip

FULL TIME EXPLORER

All journeys have secret destinations

Weekend Backpack
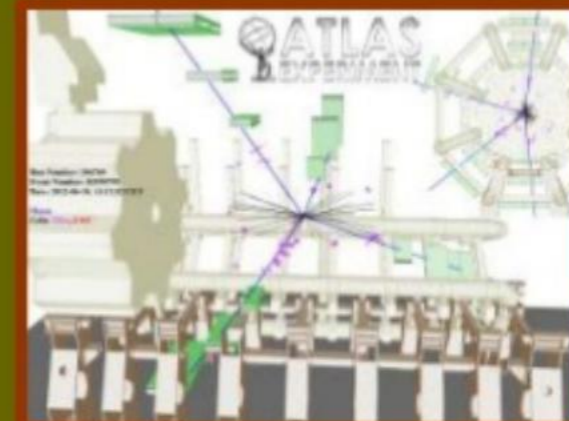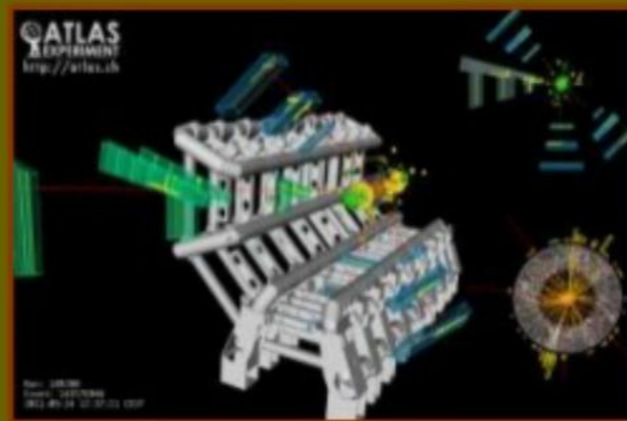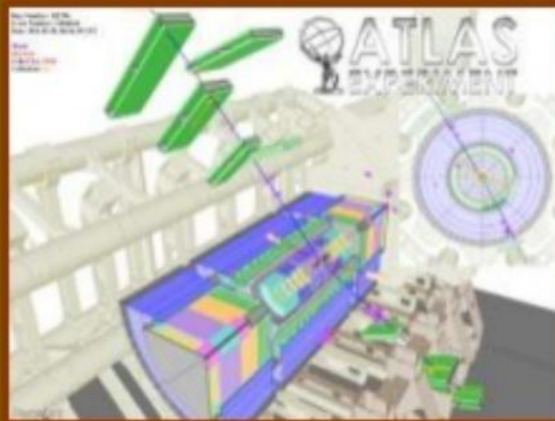
# Status of Standard Model Higgs searches in ATLAS

Using the full datasets recorded in 2011 at $\sqrt{s}= 7$ TeV and 2012 at $\sqrt{s}=8$ TeV: up to 10.7 fb$^{-1}$

Fabiola Gianotti (CERN), representing the ATLAS Collaboration
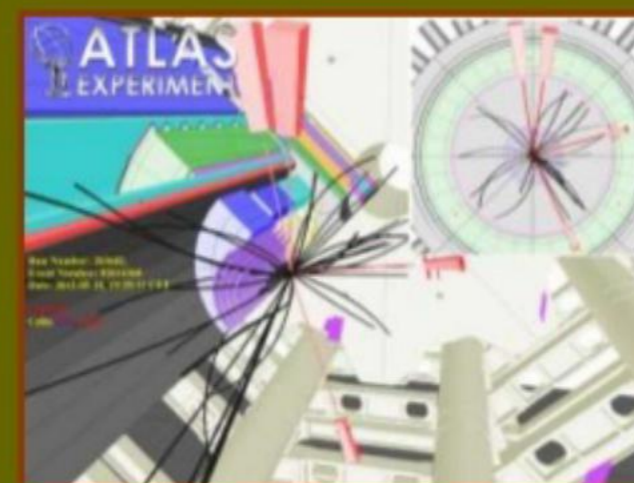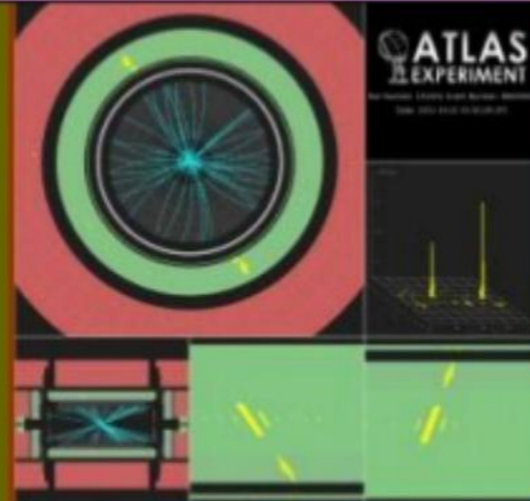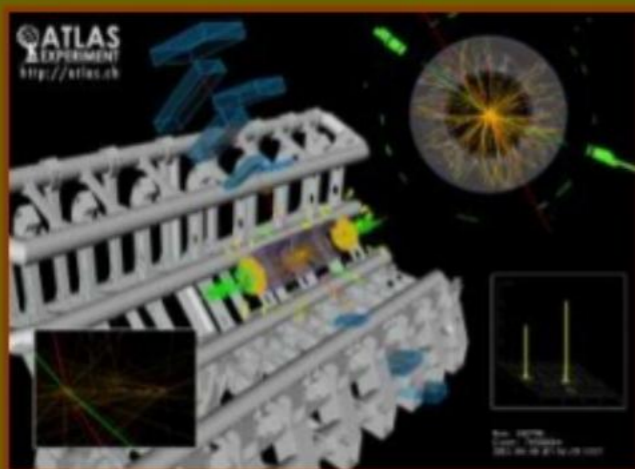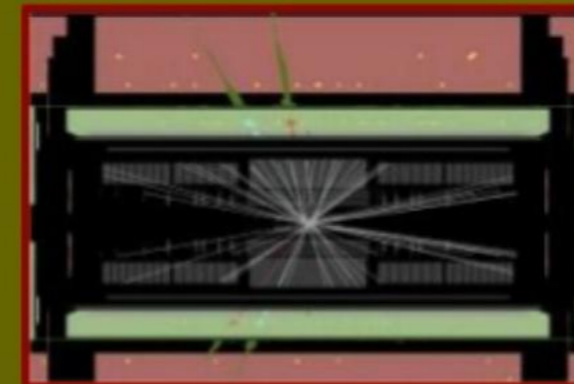
# O⁶-Benzylguanine Inhibits Tamoxifen Resistant Breast Cancer Cell Growth and Resensitizes Breast Cancer Cells to Anti-Estrogen Therapy

Joshua Smith[1], George C Bobustuc[1], Rafael Madero-Visbal[1], Jimmie Colon[1], Beth Isley[1], Jonathan T542[1], Kalkunte S. Sriveenugopal[2] and Santhi Konduri[1]

[1]Cancer Research Institute of M.D. Anderson Cancer Center Orlando   [2]Texas Tech University Health Sciences Center, Amarillo, TX

**Posters rarely need abstracts**

**Text dissolves into intimidating, boring gray**

**Too small and too much**

**Crammed!**

**Crammed!**
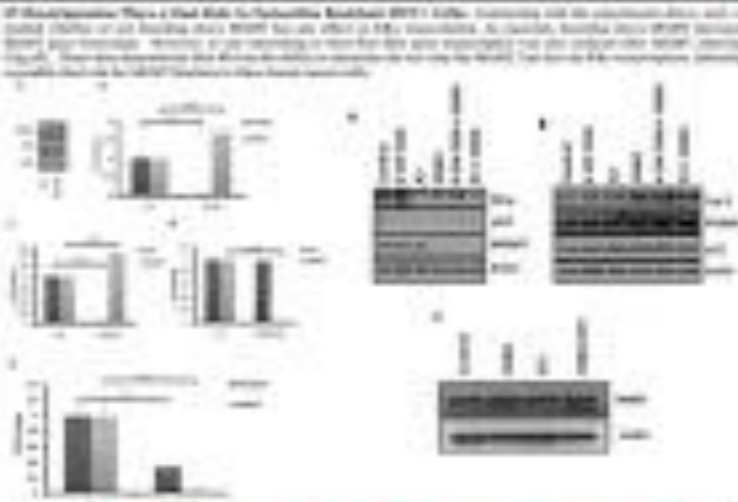
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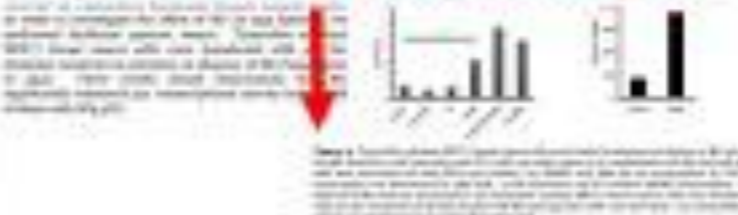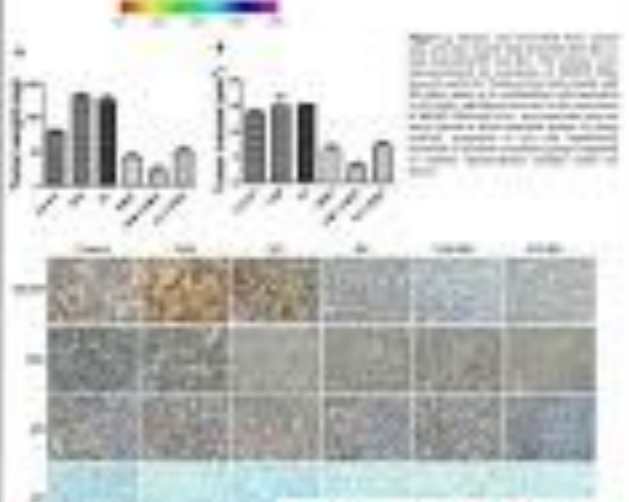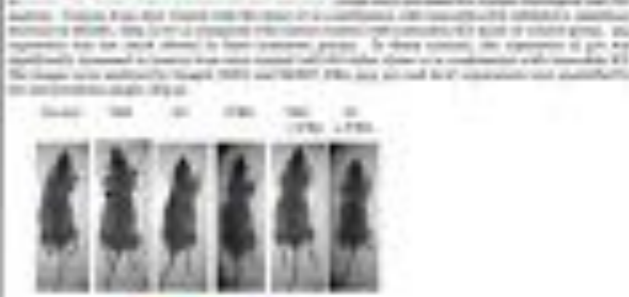
# Anatomy of a #betterposter.

**Ammo Bar**

For all the figures and tables that you feel like you need to be able to point to if somebody asks you a hard question. Leave it messy! It's just for you to reference.

WHY:
1. Lets you get the worries out of the way, so you can focus the rest of the poster on clearly communicating the need-to-know info to attendees.

2. Keeps the detail you need for questions closest to where you're standing, so you don't have to reach across the poster and block the view.

**Silent Presenter Bar**

Concentrated summary of your intro, methods, and results that can be skimmed in 1-5 minutes. Located intentionally far away from the presenter's personal space. For when an attendee wants more detail but the presenter is busy (or they just don't feel like interacting).

WHY: Centralizing and succinctly summarizing the study details in a single column is fast & easy to scan without having to hunt around the poster for each section.

**Title**
Authors

Intro

Methods
1.
2.
3.
4.

Results

Discussion

**Main finding** goes here, translated into **plain english**. **Emphasize** the important words.

Take a picture to download the full paper

**Extra Tables & Figures**

**QR Code to full paper**

Point your phone camera at this and instantly download the full paper, a copy of the poster, the presenter's contact details...and/or even the dataset powering the study.

**Main finding**

The key 'takeaway' of the study is central, translated into plain english. Research on usability writing suggests that casual language is interpreted faster than formal language.

**Focus area**

Hardly "wasted", negative space maximizes signal-to-noise ratio and helps attendees quickly find the takeaway.

https://www.youtube.com/watch?v=1RwJbhkCA58

# SCIENCE FAIR PROJECT

*By Neil Armstrong*



## PROBLEM

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## HYPOTHESIS

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## PROCEDURE


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## RESULTS



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## OBSERVATIONS



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## CONCLUSION



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# Visual and UX design principles can improve the effectiveness of Morrison's Better Poster and poster presentations

**Derek B. Crowe**[1], Melanie Rogala[3], S.P. Margolis[1,2], Luke H. Shaw[1,3], David Sanchez[2], Sarah Rutherford[2], Amber V. Odhner[2]

[1] University of Rochester, Rochester, NY
[2] Karhide University, Erhenrang, Gethen
[3] College at The Bog of Eternal Stench, Labyrinth

Correspondence: derek_crowe@urmc.rochester.edu

## Highlights

- A well-crafted message is more important than any layout design.
- Visual design strategies can be employed to incorporate lessons from Morrison's Better Poster without sacrificing valuable poster space.
- Posters are performances and audience members should have a voice in their experience.
- All academic disciplines can help us approach our world with curiosity.

## Summary

Mike Morrison's better poster style encourages scientists to distill their message, a critical step in creating effective posters. Dramatic physical layout constraints are the primary mechanism employed to help users consolidate their story, though this strategy costs a significant portion of the available poster space. Principles of visual design can guide users to achieve the same effective communication as intended by Morrison without sacrificing valuable real estate, as demonstrated here in a series of better poster layouts. These designs also incorporate user experience (UX) considerations of realistic time and social expectations during audience interactions at poster presentations. Multiple variations are offered in attempt to accommodate a wide variety of preferences and use cases. Also they're just some free powerpoint templates on a website; you monsters can do whatever you want with them.

## Let's choose a design that considers the preferences of presenters and audience members at poster sessions
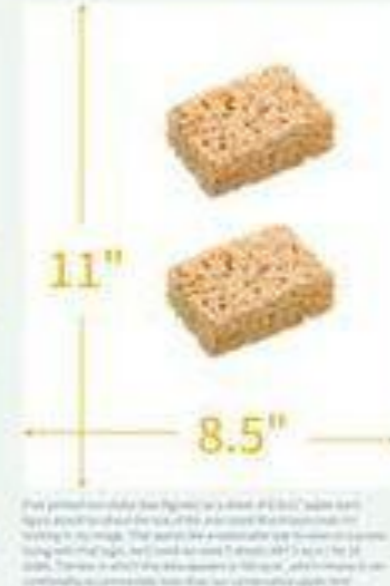


## Methods

Given that most interactions will be much less than the 20 minute estimate, this amount of space should be more than enough to contain the data required to tell your scientific story. Don't fill space just because it's there; let your content dictate the form it requires.

## Design Invitations

Let your title speak for itself, don't hide keywords or phrases. Use the white borders as modular dividers to facilitate breathing room for your text and figures. Don't be afraid of leaving open space, as I have to the right of this section or above the third column. Play with the columns based on your figure aspect ratio. See how the main title in this section and this box only span two of the three columns? It's easier to read a shorter line of text that are 50-75 characters long. (Think of how many words span a page on a novel compared to how many words stretch across the top of a science poster.) Have fun, play, don't take this too seriously.

# PROJECT TITLE HERE

First Name Last Name, First Name Last Name, First Name Last Name

SUBHEAD INTRO SIT AMET, CONSECTETUR ADIPISCING. DUIS VEL MASSA EU IPSUM TINCIDUNT CONGUE SIT AMET AC ORCI.

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# WCM Brand Guidelines

## Color Swatches

### Primary

| PMS **187** | PMS **173** | PMS **158** | PMS **123** |
|---|---|---|---|
| c0 m100 y79 k20 | c0 m82 y94 k2 | c0 m65 y98 k0 | c0 m14 y100 k0 |
| r179 g27 b27 | r207 g69 b32 | r232 g119 b34 | r255 g199 b44 |
| #B31B1B | #CF4520 | #E87722 | #FFC72C |
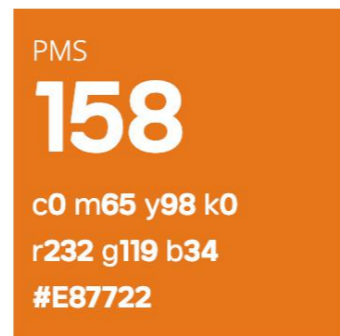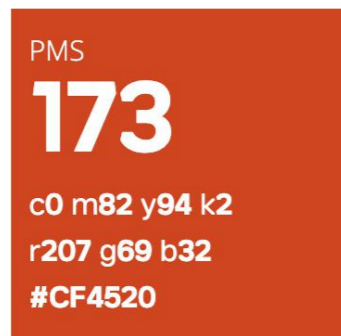
## 1898 Sans Custom Font

**1898 Bold** / *Italic*
1898 Regular / *Italic*

# InDesign Settings

Make sure you set your file size
as **36x48 INCHES**

# Functional Data Analyses for Gait Data

**Jihui Lee[1], Gen Li[1], William F. Christensen[2], Gavin Collins[2], Matthew Seeley[3], Anton E. Bowden[4], David T. Fullwood[4], and Jeff Goldsmith[1]**

[1]Department of Biostatistics, Columbia University
[2]Department of Statistics, Brigham Young University
[3]Department of Exercise Sciences, Brigham Young University
[4]Department of Mechanical Engineering, Brigham Young University

Columbia University
MAILMAN SCHOOL
OF PUBLIC HEALTH

THE DEPARTMENT OF
BIOSTATISTICS

## INTRODUCTION

### Gait Analysis

- Systematic study of locomotion
- Association with pathological conditions, movement disorders, and psychological conditions

### Ground Reaction Force (GRF)

- Force exerted by the ground on a body
- Vertical GRF (VGRF)
  - Identify and reduce the risk of certain type of injury.
  - Discern onset and progression of musculoskeletal disease.
- Laboratory with force platforms and cameras placed on a treadmill

Shoe equipped with nanocomposite piezo-responsive foam (NCPF) sensors

**In-shoe sensor technology has been introduced recently.**

**Would it be useful for gait analysis?**

## METHOD

### 1. Curve Registration

- Remove the time shifts among in-shoe sensor curves.
- For the $i$-th stance of sensor $s$, $i = 1, \dots, I$, $s = 1$ (heel), 2 (arch), 3 (ball), 4 (toe)

Observed curve $y_i^s(t^*)$ → Warping function $h_i^s(t) = t^*$ → Registered curve $y_i^s(t)$

- Warping function: Stretch or compress time intervals
  - Clock time $t^*$ (curve-specific) vs System time $t$ (shared)
  - $h: [0,1] \rightarrow [0,T]$ with $h(0) = 0$ and $h(1) = T$
  - Smooth & non-decreasing
- Iterative algorithm
  1) Calibrate the template curve and 2) Update warping functions.

### 2. Association in Phase Variability

- $H_0$: No association in warping functions across sensors within stance.
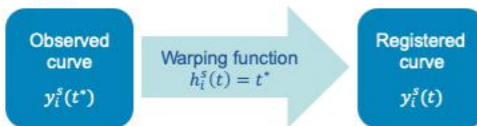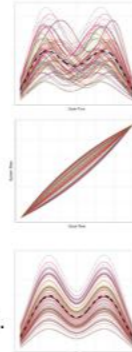- Test statistic: Mean pairwise correlation of warping functions within stance
- Permutation: Randomly permute the stance labels and calculate correlation.

### 3. Functional Regression

- Relationship between in-shoe sensors and VGRF curves
  - $GRF_i(t)$: Measure of VGRF from the $i$-th stance
  - $y_i^s(t)$: Registered in-shoe sensor curve for sensor $s$
  - $\beta^s(u,t)$: Coefficient related to the predictor measured over $u$ to the response measured over $t$
- Function-on-function regression

$$GRF_i(t) = \beta_0(t) + \int_0^1 y_i^s(u)\beta^s(u,t)\,du + \varepsilon_i(t)$$

## DATA

- Data were collected in a biomechanics laboratory at BYU.
- Case study of three healthy female subjects
- (52, 60, 60) kg / (161, 165, 169) cm / Size 8 shoes / Age (18, 30)
- Standardized athletic shoes instrumented with the NCPF sensors
- Five different trials in a randomized order (4 minutes each) after a 15-minute warm-up run at 2.68 m/s:
  Walking or running at 1.34, 2.23, 2.68, 3.13, or 3.58 m/s
- "Stance": From heel-strike to toe-off
- Three subjects completed 362, 321, and 308 stances, respectively.
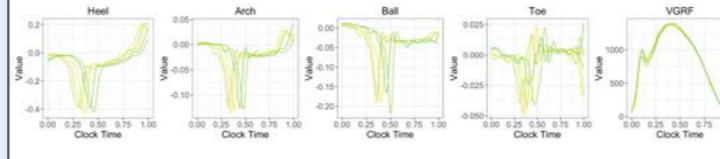


## CONCLUSION

### Summary

- We examined both phase and amplitude variabilities in the in-shoe sensor data and illustrated the importance of aligning the observed curves via curve registration.
- We found a high correlation in phase variability across sensors within stance. This results shed light on the properties of the in-shoe sensors and may help to refine the development of this new in-shoe sensor technology.
- Our results from function-on-function regression models provide some evidence for a relationship between key features of in-shoe sensor and VGRF curves. They suggest the potential value of in-shoe sensors as a surrogate of VGRF measurements.

### Future Direction

- Our results are based on a limited case study.
  : Including more subjects and stances is important to generalize our results.
- We focused on healthy subjects only.
  : Including individuals with pathological / psychological disorders and investigating their time shifts will emphasize the clinical importance of curve registration and enhance the quality of gait analysis after preprocessing.

## SELECTED BIBLIOGRAPHY

1. (Curve registration) Anuj Srivastava, Wei Wu, Sebastian Kurtek, Eric Klassen, and J. S. Marron. "Registration of functional data using Fisher-Rao metric." arXiv preprint arXiv:1103.3817 (2011).

2. (In-shoe sensor data) Parker G. Rosquist, Gavin Collins, A. Jake Merrell, Noelle J. Tuttle, James B. Tracy, Evan T. Bird, Matthew K. Seeley, David T. Fullwood, William F. Christensen, and Anton E. Bowden. "Estimation of 3D Ground Reaction Force Using Nanocomposite Piezo-Responsive Foam Sensors During Walking." Annals of biomedical engineering 45, no. 9 (2017): 2122-2134.
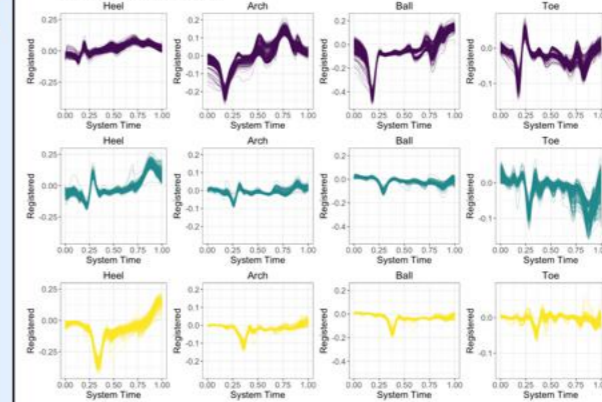
## RESULT

### 1. Curve Registration

- Before registration
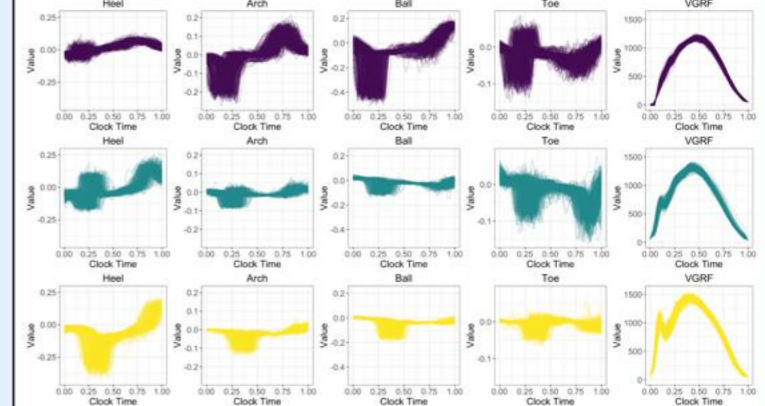


- After registration



### 2. Association in Phase Variability

| | Subject 1 | | | Subject 2 | | | Subject 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| | Arch | Ball | Toe | Arch | Ball | Toe | Arch | Ball | Toe |
| Heel | 0.617 | 0.240 | 0.094 | 0.268 | 0.264 | 0.411 | 0.378 | 0.280 | 0.238 |
| Arch | | 0.315 | 0.125 | | 0.262 | 0.258 | | 0.337 | 0.300 |
| Ball | | | 0.501 | | | 0.239 | | | 0.276 |

### 3. Functional Regression