



17th Annual Student Project & Research Symposium

A campus-wide celebration of student excellence

Thursday, April 15, 2021

Guidelines and Sample Poster

A Production by City College for City College

General Guidelines for Creating a Poster

- At least 2 types of posters to consider:
 1. Science and technical presentation posters
 2. Artistic expression posters
- Format for each type of poster is different
- But the concept is the same
 - Determine what you would like to communicate to your audience
 - Plan your layout carefully
 - Make your poster easy to read and understand
 - Be creative and tell a story
 - **JUST HAVE FUN WITH IT!**

General Tips Before You Begin

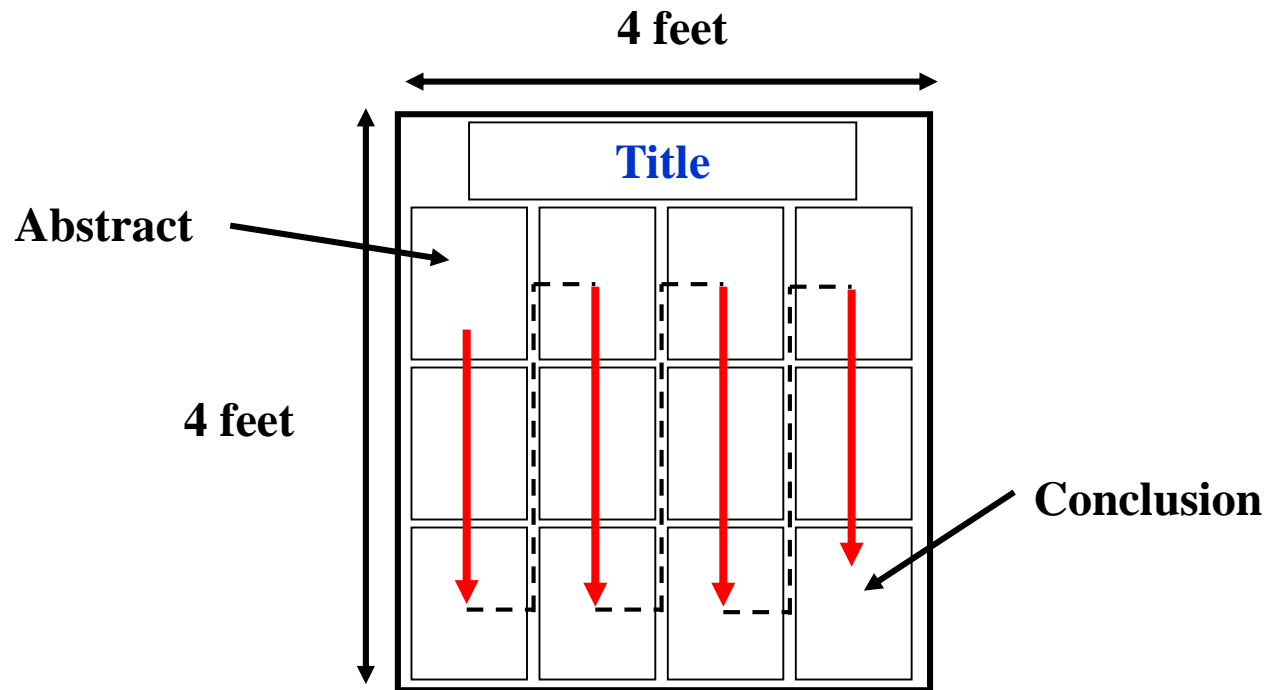
- This year we will be presenting Live in a Zoom Breakout room, therefore all references to “Physical Posters” may be replaced as “Virtual Posters” i.e your 16 slides don’t need to be printed.
- Poster presentations will be mounted on a 4 ft. wide-by-4 ft. tall free-standing display board
 - Plan your poster to fit this space
 - You can create your “poster display” from many smaller pieces and use push-pins to hold the pieces in-place. **Note: It is not necessary to use a large poster board to create your poster.**
 - Smaller pieces are easy to arrange (and re-arrange if you change your mind), and they’re easier to carry around.
- Design your poster to allow the viewer to take a 'self-guided tour' through your work.
 - Your poster should be designed to catch and hold the interest of the reader and communicate information visually rather than verbally.
 - If the viewer has to 'work' too hard to figure out the meaning of your poster, he or she will probably just skip it and move on to the next one.
- Keep the 'message' of your poster as clear and simple as possible. Make the text material very brief, the illustrations simple and easy to read, and the poster as visually pleasing as possible.

1. Tips for Science and Technical Poster Presentations:

LAYOUT

- Sketch the layout of your poster. See Figure 1 for reference.
- Arrange the contents in a series of 3, 4 or 5 columns to make it easy to read. Remember that people typically read from left-to-right and top-to-bottom.
- Place the elements of the poster in position:
 - Title across the top
 - Abstract in the upper left
 - Conclusion at the lower right
 - Introduction, methods, results, summary, figures, pictures, tables, schematics, etc. fill the remaining space
 - Arrange your elements in a logical sequence
 - If possible, vary the size and spacing of the poster sections to add visual interest
 - You can use color to unify your poster. Use darker colors as borders for emphasis, but be conservative – overuse of colors is distracting. Using 2 or 3 related background colors can help to unify sections of your poster.

Figure 1. Sample poster layout



Sample Poster

Basics – *what you must have:*

1. Title
2. Abstract (*if not available, begin with introduction*)
3. Introduction
4. Experimental design and Methods
5. Data
6. Results
7. Conclusion

Title

- Think big!
- Title banner should be readable from 15-20 feet away.
- Prepare a title which includes the name of your project, name(s) of people who conducted the work, faculty mentor's name and San Diego City College.
- Font - use a larger font size for the name of your project.
Note - do not use all uppercase letters for the title banner. It is easier to read the banner when it is NOT done entirely in uppercase letters.



Sequential Finger Force Associated with Fatigue

M.C. Camarena, P. Osborne, J.L. Agraz, B. Barnes,
Mentor: R.S. Pozos, Ph.D.

San Diego City College

Abstract

- Abstract should address the following questions: *
 1. Why it was done and what is the problem being addressed?
 2. What did you do?
 3. What did you find out?
 4. Conclusions?

* Source: <http://writing2.richmond.edu/training/project/biology/abslit.html#others>
- Post a copy of your abstract in a large readable typeface. Maximum 250 words.
- If an abstract is not available, begin your poster with the Introduction



Abstract:

This experiment was performed to determine if fatigue will occur in a sequential finger key press protocol. Force measurements, digital key presses expressed in a digital format, and surface EMGs were recorded and analyzed during sequential key presses as possible indicators of fatigue. Fatigue was noted to occur in all fingers, beginning with the thumb, followed by the little, middle and ring fingers, respectively. Fatigue resulted in misses and overlaps in key presses, which increased towards the end of the experiment. Sequential finger force production readily leads to fatigue. Time to fatigue (average), with no arm-rest and with arm-rest support, was about 4 min. and 10 min., respectively. Analyzing the analog, digital, and surface EMG data, concurrently, documents the production of fatigue in normal subjects and may provide insight into the mechanisms used in the human brain to control finger motion.

Introduction

- The introduction should be brief (3-5 sentences).
- If possible, the introduction should put the question(s) you are trying to answer into a broad context of your area of science and provide any necessary background information



Introduction:

- ***Objective:*** To quantitate the onset of fatigue in a sequential finger key press protocol.
- Hypothesis is that fatigue, classically defined as a significant decrease in force production, will occur during the trial.
- Force measurements, digital key presses expressed in a digital format , and surface EMGs were recorded and analyzed during sequential key presses as possible indicators of fatigue.

Experimental Design and Methods

Briefly state what techniques and instruments you used to accomplish your work.



Experimental Design for Sequential Key Press Experiment



- High-speed camera records motion of finger at 1000 frames/sec.
- Ergonomic five-key keyboard records analog and digital signals.
- Electrodes placed on surface forearm record flexor/extensor EMGs.
- The metronome is used for subjects to maintain a certain rate.

Methods:

- Subjects were instructed to sequentially press keys until the onset of fatigue.
- Duration of time, maximum force applied, and total area of the force profile (duration X maximum force) from beginning to end were compared for each finger.
- All the forces from each finger in an epoch were summed, averaged and called the five-finger force (FFF) profile.
- Sequential key presses were analyzed and the time was recorded whenever a key was missed or pressed more than once during the hand epoch.

Data

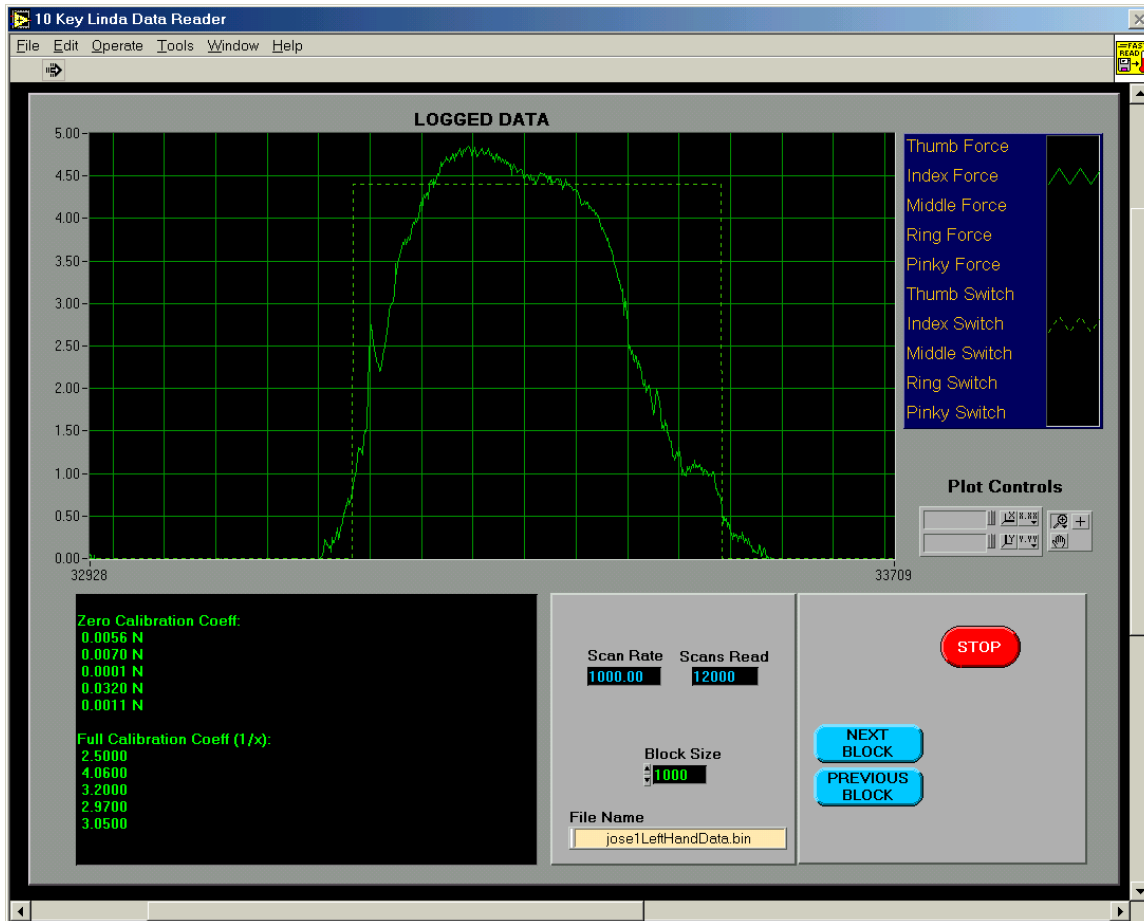
- Data section will constitute the bulk of your poster material.
- Charts, drawings and illustrations should be kept as simple as possible and labeled correctly.
- Use of color can enhance the readability of materials viewed from a distance by using contrasts in brightness and tone between illustrations and backgrounds. Try to avoid using black letters on a dark background

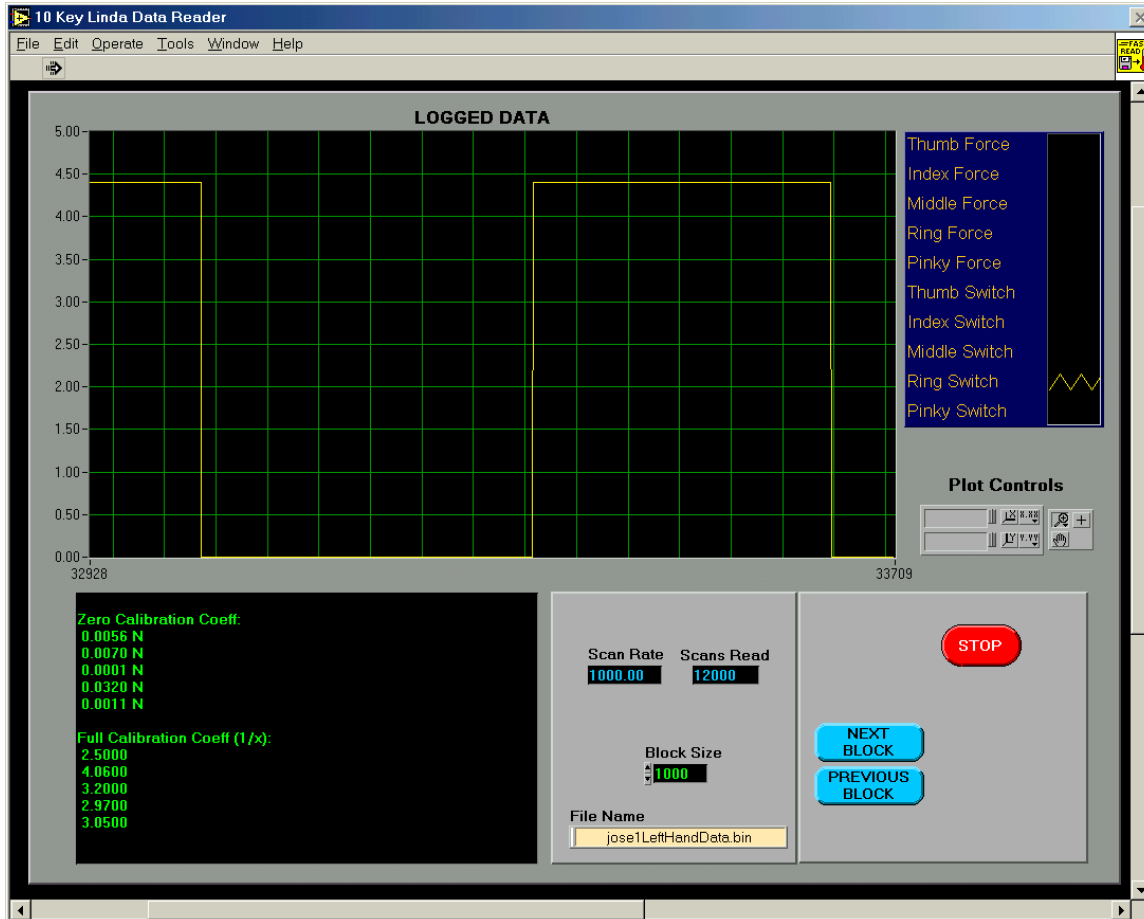


Data (*continued*)

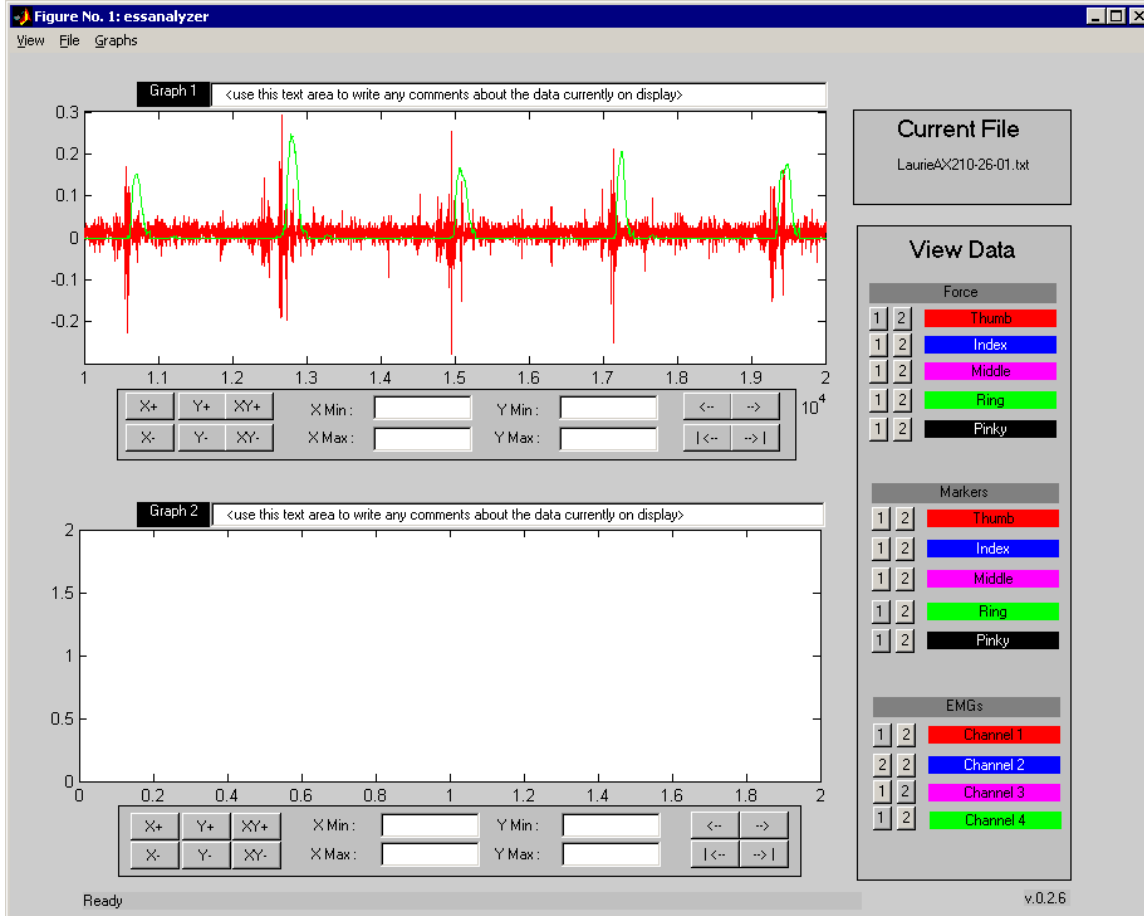
- An effective illustration should have a main point and not just be a collection of data. The main point ideally should be readily understandable by the casual viewer
- Include enough information to explain how the experiment was done, but keep it simple enough to make the data interpretable to someone who may not be an expert in the field.
- Illustrations should be labeled correctly and readable from a distance of three to four feet, so it is helpful to use lettering that is 1/2 to 1 cm high. Heavier typefaces (e.g. boldface) are easier to see at a distance. Use software like Excel™ to make your graphs and tables.
- The limited space available on a poster makes it desirable to use data effectively displayed, rather than extensive prose or pictures. It is not a good idea to mount a complete manuscript that will take the viewer 30 minutes to read.











Individual Finger Force Analysis

THUMB									RING								
Width			Max Force			Area			Width			Max Force			Area		
S vs M	S vs E	M vs E	S vs M	S vs E	M vs E	S vs M	S vs E	M vs E	S vs M	S vs E	M vs E	S vs M	S vs E	M vs E	S vs M	S vs E	M vs E
-	-	-	+	+	+	+	+	+	-	+	+	-	-	-	-	+	-
+	+	+	+	+	-	+	+	-	-	-	-	-	-	-	-	-	-
+	+	+	+	+	-	+	+	-	-	-	-	+	+	-	+	+	-

INDEX									LITTLE FINGER								
Width			Max Force			Area			Width			Max Force			Area		
S vs M	S vs E	M vs E	S vs M	S vs E	M vs E	S vs M	S vs E	M vs E	S vs M	S vs E	M vs E	S vs M	S vs E	M vs E	S vs M	S vs E	M vs E
+	+	+	+	+	-	+	+	+	-	+	+	+	+	+	+	-	+
+	-	+	+	-	+	+	-	+	+	-	-	-	+	-	-	+	-
+	-	-	-	-	-	+	+	-	-	+	+	+	-	+	-	-	+

MIDDLE								
Width			Max Force			Area		
S vs M	S vs E	M vs E	S vs M	S vs E	M vs E	S vs M	S vs E	M vs E
-	+	+	+	+	+	+	+	+
+	-	+	-	+	+	-	+	+
-	+	+	-	-	-	-	-	-

Figure 2: Unpaired T-test analysis ($p < 0.05$) for each finger shows the thumb fatigues first in a sequential finger press experiment, “+” represents statistically significant difference.

Loss of Motor Control*

Number of errors	Experimental Data Collected at 1000 Samples/Second										Time (min)
	T/I	T/M	T/R	T/L	I/M	I/R	I/L	M/R	M/L	R/L	
1	75362				75362	75362	75362				1.26
2			208757			209049		209387		208462	3.47
3	248350				248350	248350	248350				4.14
4		314528			314528			314528	314528		5.24
5			386409			386409		386409		386409	6.44
6	392153				392153	392153	392153				6.54
7			408528			408882		409232		408268	6.80
8				482689			482689		482689	482689	8.04
9			586344			586344		586344		586344	9.77
10								650459			10.84
11								652160			10.87
12				758939			759255		759589	759902	12.65
13				778065							12.97
14	778739	778739	778739								12.98
15				821568				821161			13.69

*Loss of motor control is defined as skipping a key or pressing a key more than once during a hand epoch of a sequential finger press experiment. **Note: Number of errors increases with time.**

Results

Provide a brief summary of your results



Results:

- Fatigue was noted to occur first in the thumb, then the little, middle and ring fingers, respectively.
- Fatigue resulted in misses and overlaps in key presses, which increased towards the end of the experiment.
- Decrease in extensor EMG amplitude along with an eventual rise in flexor EMG amplitude occurred in each subject.

Conclusion

Summarize your findings and give the reader a 'take-home' message.



Conclusions:

- Sequential finger force production readily leads to fatigue. Time to fatigue (average), with no arm-rest and with arm-rest support, was about 4 min. and 10 min., respectively.
- Analyzing the analog, digital, and surface EMG data, concurrently, documents the production of fatigue in normal subjects.
- These combined data may give us insight into mechanisms used in the human brain to control finger motion.

Further Research Areas:

- Does the brain control the finger presses individually or combined?
- Is there symmetry between the fingers in respect to force production in the same hand? For example, for the same key stroke do you get a similar force profile?
- Do these profiles change if there is an injury?

Acknowledgements

If you have space, you may want to include a “thank you” section where you thank your faculty mentor, research partner(s) and loved ones for putting up with you

2. Tips for Artistic Impression Poster Presentations

- Unlike science/technical poster presentations, the format for artistic impression posters is less structured – the artistic images tell the story.
- However, keep in mind the need for poster elements such as a layout, typography, use of color/texture, imagery and conceptual content.
- Include sufficient commentary to explain any important details, i.e.:
 - What is the origin or focus of the images?
 - How were the images created?
 - What process was used? etc.



Quality

Ready to present? Use this list to check your poster for “quality”!

- Size?** Your poster must fit in a 4 ft x 4 ft area
- Clear?** The focus of your project must be clear
- Concise?** Keep it simple. Avoid too much information, too much data and too many words. Use pictures, bullets and colors.
- Errors?** No spelling or grammar errors.
- Appealing?** Your poster must be “inviting”. Think about the readers. Why would they want to read your poster?

Reference Websites for Poster Presentation Information

- <https://support.zoom.us/hc/en-us/articles/203395347-Screen-sharing-a-PowerPoint-presentation>
- http://www.kumc.edu/SAH/OTEd/jradel/Poster_Presentations/110.html

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Join the celebration!