

**THE SCHOOL OF INTERDISCIPLINARY AND
GRADUATE STUDIES**

University of Louisville

**GUIDELINES FOR THE PREPARATION
AND PROCESSING OF THESES AND
DISSERTATIONS**

**Approved by Graduate Council
March 5, 2014**

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THE SCHOOL OF INTERDISCIPLINARY AND GRADUATE STUDIES

University of Louisville

GUIDELINES FOR THE PREPARATION AND PROCESSING OF THESES AND DISSERTATIONS

The purpose of these guidelines is to assist graduate students and their mentors with the preparation, formatting, and submission of theses and dissertations to the School of Interdisciplinary and Graduate Studies. Students should follow these guidelines and contact the School of Interdisciplinary and Graduate Studies with questions left unanswered by these instructions. Theses/Dissertations received by the School of Interdisciplinary and Graduate Studies that do not reasonably adhere to these guidelines will be returned to the student or committee chairperson; some deviations from these guidelines will be permitted if the student can demonstrate that the proposed format is acceptable to the individual's scholarly discipline. Final approval of all formatting of theses/dissertations rests with the School of Interdisciplinary and Graduate Studies.

Review by School of Interdisciplinary and Graduate Studies

Students are required to have their theses/dissertations reviewed by a representative from the School of Interdisciplinary and Graduate Studies prior to submitting the final copy to make sure that they adhere to the guidelines. The review may be completed by scheduling an appointment with Courtney Kerr, Coordinator of Academic Services, at clkerr01@louisville.edu to come into the School of Interdisciplinary and Graduate Studies or can be done by sending a PDF document via e-mail to Ms. Kerr. Please indicate in the message that you are requesting the document be reviewed.

Style and Format Requirements

While some departments may suggest that students follow a particular style manual in the preparation of theses/dissertations, the *Guidelines for the Preparation and Processing of Theses/Dissertations* supersede all other style manuals. Final responsibility for the form, accuracy, and completeness of the dissertation lies with the student, although the committee chair should assist the student in this process. It is in the best interests of the student to be internally consistent in style, notation, form, etc. **It is not acceptable to submit published articles or a published monograph manuscript in lieu of a properly formatted thesis/dissertation.** The finished dissertation should contain all the components described in these guidelines. Students are expected **to prepare the thesis/dissertation with commercially and widely-available word processing software.**

Published Work

With the approval of your adviser and your thesis or dissertation committee, you may include part or all of the content of manuscripts published in or accepted for publication by scholarly journals and proceedings as chapters in your thesis or dissertation. If you choose this option, you must:

1. Be a primary author—i.e., lead author—of the articles (i.e., a person principally involved in the data selection or collection, the data analysis or interpretation, and the writing of the papers).
2. Obtain the needed copyright clearance from the publisher—i.e., a letter granting permission to include the journal article in your thesis or dissertation.
3. Include a proper citation to the work, either a footnote or a citation in the reference section of the thesis or dissertation.
4. Format the work so that it conforms to the requirements as specified in “Guidelines for the Preparation and Processing of Theses and Dissertations” (*The Guidelines*). In other words, the journal publication cannot simply be pasted into the thesis or dissertation in its published format.

There is no limit to the number of journal publications you may include in your thesis or dissertation, as long as each constitutes an independent chapter and, together, the articles blend cohesively with each other and work in other chapters of the thesis or dissertation. Students should consider having an introductory chapter and discussion or conclusion chapter in the thesis or dissertation to unify and provide context to the material in the intermediate chapters.

The content and format of each paper included may be similar to or the same as what you submit to the journal/proceedings, except the content must comply with the formatting requirements as outlined in *The Guidelines*. The bibliography or reference section of each article must become part of the final Reference Section in the thesis and dissertation, as stipulated in *The Guidelines*. There should be only one abstract and one list of acknowledgments for the thesis or dissertation.

If the publisher grants permission for the publication to be used, the publisher will give instructions on how the approval should be documented in the thesis/dissertation. The publisher’s official notice of approval must be formatted accordingly and added as an Appendix. Permission to use previously published material in a thesis or dissertation doesn’t necessarily give the student permission to sell that material. The student may need to put a restriction on the sale and availability of his/her work according to the publisher’s guidelines.

Landscape Pages

Landscape pages are allowed. When including landscape pages be sure to include the page number. The page number should remain in portrait style at the bottom center, 1/2" from the bottom edge.

Fonts

A standard font of 10 or 12 points should be selected for use throughout the entire thesis/dissertation. Standard fonts include Arial, Courier, CM, or Times New Roman. Eccentric type styles, such as cursive, are not permitted.

Margins and Spacing

Each page of the document should have the following margins:

Top:	2" for the first page of each chapter or division; 1" for all other pages.
Bottom:	1"
Left:	1 1/2"
Right:	1"

The entire thesis/dissertation should be double-spaced except for long quotations, computer programs, endnotes, footnotes, and text in tables when appropriate. These exceptions should be single-spaced.

Paragraphs should begin with a standard, consistent indentation and each sentence should be consistently followed by one or two spaces after the period before the next sentence begins.

Signature page

Students must submit a hard copy of their signature page on white paper, with original signatures, to the School of Interdisciplinary and Graduate Studies.

Students are responsible for preparing and printing the signature page and obtaining the signature of each thesis/dissertation committee member. Please check with your advisor or department to see if they require a paper copy of your thesis/dissertation or if they require a copy of the signature page.

While not required, students may wish to have their thesis/dissertation bound. For archival purposes, students may wish to print on 25% cotton paper.

Pagination

Preliminary pages should be numbered with lower-case Roman numerals (ii, iii, etc.) at the bottom and center of each page, ½" from the bottom edge. The title page should be counted when numbering successive pages, but the number should not appear on that page. The first page on which a number should appear is the signature page (numbered ii). See page 7 for a complete list of thesis/dissertation pages and how each should be numbered, and see illustrations A-N for examples of each page.

Begin numbering the text with Arabic numerals (1, 2, 3, etc.) at the start of the first page of text (after the abstract). Arabic numerals should appear ½" from the bottom center of the page. All pages in the appendices must also be numbered. The page and pagination continues through all content, e.g. References, Appendices, and Curriculum Vita.

Electronic Format Theses/Dissertations

The School of Interdisciplinary and Graduate Studies requires the submission of a digital thesis/dissertation. The digital document must be submitted in Adobe PDF format. No compression or password protection should be used. The School of Interdisciplinary and Graduate Studies will not make changes to the content of the document. Therefore, the document's appearance when it is accessed or printed is entirely the responsibility of the author. The author must assume responsibility for preparing the document according to the School of Interdisciplinary and Graduate Studies Guidelines for the Preparation and Processing of Theses/Dissertations, converting the document into Adobe PDF format, checking the document for appearance, and submitting the PDF document to the School of Interdisciplinary and Graduate Studies. The electronic copy is reviewed in regard to formatting and will be sent to the University Library. The electronic version should not include signatures from the dissertation advisory committee. It should list the committee members' names only.

Submission of an electronic format thesis/dissertation will allow **compound** (mixed format) documents to be developed. Such documents may contain both text and other electronic media only available and accessible through a specific electronic format. For example, a biological study could contain a database with a complete gene map, or an analysis of a screenplay could be accompanied by a CD, DVD or other media storage device containing full motion video of a performance of the work. External and internal links to multi-media files are acceptable and all fonts used should be embedded in the document. If multi-media elements are used in the document, file formats should be identified in the thesis/dissertation abstract. Acceptable file formats include the following:

Images:

GIF (.gif)
 JPEG (.jpeg)
 PDF (.pdf) use Type 1 PostScript fonts
 TIFF (.tif)

Video:

Apple Quick Time (.mov)
 Microsoft Audio Video Interleaved (.avi)
 MPEG (.mpg)

Audio:

AIF (.aif)	MIDI (.midi)	WAV (.wav)
CD-DA	MPEG	
CD-ROM/XA	SND (.snd)	

Standards for multi-media formats change often. Please check with the School of Interdisciplinary and Graduate Studies if you wish to use a multi-media format that is not listed in this document. Multimedia submissions must be placed on a CD-or DVD ROM, or on a Submitted CD-ROMs must follow the ISO 96-90 specification for disk creation. Player or reader must be ubiquitous free ware or fully licensed third party software. A copy of the application used to display, play or read the document must be available on CD and be fully licensed on a reader's machine. Author created programming must be in a format that can be copied by a machine at an operating system prompt.

Plagiarism

The School of Interdisciplinary and Graduate Studies of the University of Louisville defines plagiarism in the following way:

Representing the words or ideas of someone else as one's own in any academic exercise, such as:

1. Submitting as one's own paper a paper written by another person or by a commercial "ghost writing" service.
2. Exactly reproducing someone else's works without identifying the words with quotation marks or by appropriate indentation, or without properly citing the quotation in a footnote or reference.
3. Paraphrasing or summarizing someone else's work without acknowledging the source with a footnote or reference.
4. Using facts, data, graphs, charts, or other information without acknowledging the source with a footnote or reference or using copyrighted material without permission.

Borrowed facts or information obtained in one's research or reading must be acknowledged unless they are "common knowledge." Clear examples of "common knowledge" include the names of leaders of prominent nations, basic scientific laws, and the meaning of fundamental concepts and principles in a discipline. The specific audience for which a paper is written may determine what can be viewed as "common knowledge": for example, the facts commonly known by a group of chemists will differ

radically from those known by a more general audience. Students should check with their mentors regarding what can be viewed as “common knowledge” within a specific field, but often the student will have to make the final judgment. When in doubt, footnotes or references should be used.¹

Plagiarism is forbidden and can result in disciplinary action and immediate dismissal from the University of Louisville.

Animal and Human Studies Approval

Compliance with federal regulations governing the use of human subjects, experimental animals, animal care, radiation, recombinant DNA (Institutional Biohazard Committee approves <https://louisville.edu/dehs/biosafety/institutional-biosafety-committee-ibc.html>), or the handling of hazardous materials in research is monitored by a number of federal agencies. Students are required to verify their compliance with appropriate approval procedures prior to beginning any dissertation research. This approval must be cited in the dissertation. Please refer to the University Human Studies web site (<http://research.louisville.edu/UHSC/UHSC.htm>) or the Office of Research Services Institutional Animal Care and Use Committee for more information regarding University and Federal guidelines and the process of obtaining approval for human or animal research plans.

Survey of Earned Doctorates (for Doctoral Students only)

Doctoral candidates must complete the “Survey of Earned Doctorates.” This form is completed online. The web address is as follows:
<https://survey.norc.org/doctorate/showRegister.do>

Each student will have to register, at which time you will receive the URL, PIN and password information, which is required to complete the survey.

¹ Graduate Student Orientation Handbook, University of Louisville, Office of the School of Interdisciplinary and Graduate Studies Dean, page 5.

Parts and order of pages for a Thesis or Dissertation

Title Page

The title page is required. It should be assigned the page number “i” (lower case Roman numeral one), although the number does not appear on the page. The date included on the title page is the month and year of the author’s graduation (December, May and August). On the title page, the student should include the unit (College of Arts and Sciences, School of Medicine, etc.) that houses the degree program and the faculty who will grant the degree. Students must add after the degree, the students major (program plan), (in Humanities, in Microbiology and Immunology, etc). See Illustration A for a sample title page.

Copyright Page

The copyright page is optional but if included, must be inserted immediately after the title page. It should be left unnumbered, and it is not counted in numbering successive pages. See Illustration B for an example of a copyright page.

Blank Page

The blank page is required and should not include markings of any sort. It should be left unnumbered, and it is not counted in numbering successive pages. If there is no copyright page, the blank page follows the title page.

Approval/Signature Page

This page is required of all theses/dissertations. The committee signatures must be original (not copies of the original) and in black or blue ink that will photocopy. The electronic document should not include the signatures. It should list each committee members name typed underneath the signature line. The date on this page is the date of the final oral examination or defense. The page should be numbered as page “ii” (lower case Roman numeral two). Successive pages should be numbered from this page. See Illustration C for an example of an approval/signature page.

Dedication and/or Acknowledgment Pages

These pages are optional for theses/dissertations. Lower case Roman numerals should be used to number these pages. See Illustrations D and E for sample dedication and acknowledgment pages.

Abstract

All theses/dissertations must include an abstract. It should be numbered with lower case Roman numerals and should include the student's name, the title of the dissertation, and the defense date or degree awarding date. The thesis abstract must not exceed 150 words and the dissertation abstract must not exceed 350 words. Although students and their committees determine the contents of the abstract, the following information is appropriate:

- a brief introduction of background or importance;
- a brief discussion of methods and procedures used in gathering data;
- a condensed summary of findings; and
- a summary of conclusions reached in the study.

See Illustration F for a sample abstract.

Table of Contents

The Table of Contents is required for all theses/dissertations. The Table of Contents is NOT listed in the Table of Contents. Number all table of contents pages with lower case Roman numerals. See Illustration G for a sample Table of Contents page.

List of Tables

This list should only be included in a thesis/dissertation that incorporates five or more tables. If used the List of Tables page(s) should be numbered with lower case Roman numerals. See Illustration H for a sample List of Tables. See Illustration K for a sample table.

List of Figures, Illustrations, Charts, or Graphs

This list should only be included in a thesis/dissertation that incorporates five or more figures, illustrations, charts, or graphs. If used, the List of Figures page(s) should be numbered with lower case Roman numerals. See Illustration I for a sample list of figures. See Illustration L for a sample figure. A list of symbols page is optional as needed. If figures must be presented in landscape format, the page must be numbered at the bottom center and the margin of 1 ½" must be maintained on the binding side of the figure. Page number will remain in portrait style.

Text

The pages of the body of the thesis/dissertation should be numbered with Arabic numerals (1, 2, 3, etc.). Each chapter or section should begin at the top of a new page. With a top margin of 2", the title of the section should be centered and typed in full capital letters. The first line of text begins two double spaced lines below the section title. Headings and subheadings may be bolded. See Illustration J for sample pages of text.

Footnotes or Endnotes

Footnotes come at the bottom of the page where noted and endnotes come at the end of each chapter or are grouped together directly after the entire body of the thesis/dissertation. They should be uniform and formatted according to a standard style guide (such as the *Publication Manual of the American Psychological Association*).

References or Citations

All theses/dissertations must include a list of works cited and/or referenced. The citations should appear directly after the body of the thesis/dissertation (and after footnotes or endnotes, if they are used). References may be presented in the style of the scholarly discipline, i.e., they may be alphabetical, numerical, in order of citation, etc. All pages of the references should be numbered with Arabic numerals at the center of the bottom of the page. Use of citation management software is highly recommended. The University supports the use of “EndNote” and information regarding this product can be found at <http://louisville.libguides.com/endnote> See Illustration M for a sample reference page.

Appendix

Appendices are optional for theses/dissertations. If included, all pages of an appendix must be numbered in Arabic numerals as in text.

Curriculum Vita

Inclusion of a Curriculum Vita as the last page(s) of the thesis/dissertation is required. The vita should be numbered at the bottom center of each page. See Illustration N for a sample Curriculum Vita.

Theses/Dissertations Prepared in a Foreign Language

Theses/Dissertations submitted to the School of Interdisciplinary and Graduate Studies should be written in English. Only under exceptional circumstances may another language be used, and only with prior approval obtained from the School of Interdisciplinary and Graduate Studies.

Binding

The University no longer requires binding of Theses/Dissertations. If you wish to have a bound copy of your Thesis/Dissertation, the School of Interdisciplinary and Graduate Studies can provide a list of companies that provide this service.

Publishing and Copyrighting

The School of Interdisciplinary and Graduate Studies does not require students to submit their thesis or dissertation to ProQuest; however, upon request, the School of Interdisciplinary and Graduate Studies will assist students who wish to submit their work to ProQuest for publishing.

Publication rights are reserved to the author, subject to the provisions of research contracts, patent agreements, or other similar agreements made by the author with the dissertation/thesis advisor, the university, the funding agency, or other parties.

Dissertations/Theses are published exactly as they are submitted. They are not edited, typeset, or retyped by the School of Interdisciplinary and Graduate Studies. Students are responsible for the content and appearance of their work.

Students have the option to copyright their theses/dissertations. Degree candidates may contact the Library of Congress directly to complete this process. The information can be found on the following web-site: <http://www.copyright.gov/forms/>

SIGS Policy on Embargo of Electronic Theses and Dissertations

Students and their faculty advisor may request to embargo the release of the thesis or dissertation for a period of 6 months. The embargo will apply to release through the University of Louisville Libraries. Reasonable justification for requesting an embargo would include, for example, patent protection or copyright issues. The faculty advisor and student should jointly submit a request for approval of the embargo to the Dean of the School of Interdisciplinary and Graduate Studies.

Student Submission

Electronic Submission of Thesis or Dissertation:

<https://graduate.louisville.edu/forms/electronic-thesis-or-dissertation-submission-form/>

Nonexclusive License

Student must agree to the “Nonexclusive License to Electronically Disseminate University of Louisville Thesis or Dissertation” which allows University Libraries to archive the Thesis or Dissertation on their Electronic Thesis and Dissertation web-site. The document can be found on the web-site:

<https://louisville.edu/graduate/sigs/Programs/theses-dissertations>

Students also receive this form after the initial review of their Thesis or Dissertation.

Deadlines

Deadlines for the submission of theses/dissertations are published in the schedule of classes and on the School of Interdisciplinary and Graduate Studies web-site.

Sample Thesis/Dissertation Pages

The following pages are samples illustrating these thesis/dissertation guidelines. **NOTE: Illustration letters at the top of each page refer to the contents below and should not be reproduced on actual thesis/dissertation pages. Also, authors should use either thesis or dissertation on their title pages as appropriate, not both as shown on the samples. These Sample Pages are only examples of form and style; authors have flexibility as long as they remain internally consistent and consistent with their scholarly disciplines.**

Illustration A Title page*

Illustration B Copyright page*

Illustration C Signature/Approval page*

Illustration D Dedication page

Illustration E Acknowledgment page

Illustration F Dissertation Abstract

Illustration G Thesis Abstract

Illustration H Table of Contents (and text page 2)

Illustration I List of Tables

Illustration J List of Figures

Illustration K Sample pages of body of thesis/dissertation

Illustration L Table

Illustration M Figure

Illustration N References

Illustration O Curriculum Vita

*The text on these pages should be centered between the left and right margins.

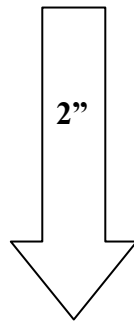
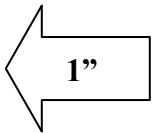
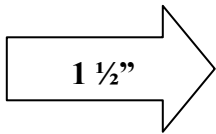


Illustration A

THE MOST PREVALENT FORM OF ENLIGHTENMENT

By

John Henry Stewart
B.A., Seton Hall, 1996
M.A., Louisiana State University, 1998



A Thesis or Dissertation
Submitted to the Faculty of the
College of Arts and Sciences of the University of Louisville
in Partial Fulfillment of the Requirements
for the Degree of

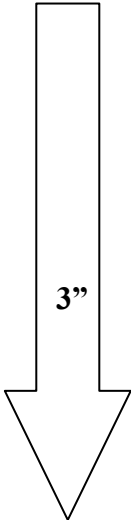
Master of Arts or Doctor of Philosophy
in English/Rhetoric and Composition

Department of English
University of Louisville
Louisville, Kentucky

May 2002

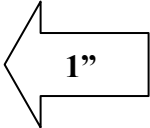
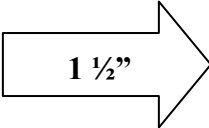


Illustration B



Copyright 2002 by John Henry Stewart

All rights reserved



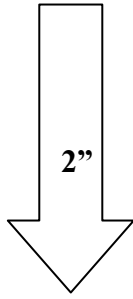


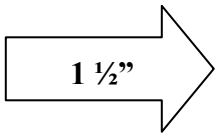
Illustration C

THE MOST PREVALENT FORM OF ENLIGHTENMENT

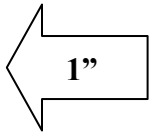
By

John Henry Stewart
B.A., Seton Hall, 1996
M.A., Louisiana State University, 1998

A Thesis or Dissertation Approved on



April 22, 2002



by the following Thesis or Dissertation Committee:

Thesis or Dissertation Director
Name

Thesis or Dissertation Co-Director or Second Committee Member Name

Third Committee Member Name

Fourth Committee Member Name

Fifth Committee Member Name





Illustration D

DEDICATION

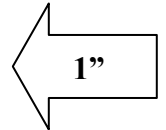
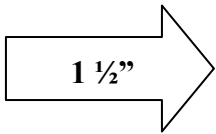
This thesis or dissertation is dedicated to my parents

Mr. Appurajapuram Krishnamurthy Sethuraman

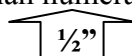
and

Mrs. Nagalakshmi Sethuraman

who have given me invaluable educational opportunities.



(l.c. Roman numeral page # here)



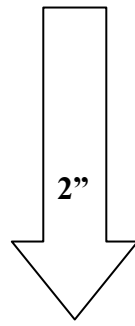
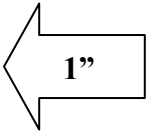
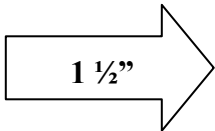


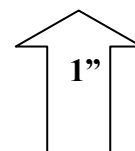
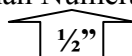
Illustration E

ACKNOWLEDGMENTS

I would like to thank my major professor, Dr. Jack Watson, for his guidance and patience. I would also like to thank the other committee members, Dr. Joe Perona and Dr. Fred Weber, for their comments and assistance over the past four years. I would also like to express my thanks to my wife, Amy, for her understanding and patience during those times when there was no light at the end of anything. She encouraged me and made me stick with it. Also, many thanks to the members of my family in Savannah, Georgia: Paul and Jeanenne Adams, Jim and Catherine Shippy, and the late Eleanor and Fred Catti. Finally, I would like to thank the members of my family in Knoxville, Tennessee, Andy and Ruth Thomason.



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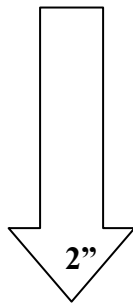


Illustration F
Dissertation Abstract

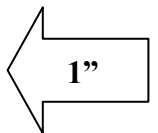
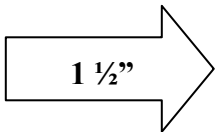
ABSTRACT

WRITING ASSESSMENT AS SOCIAL ACTION

Ellen E. Schendel

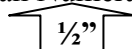
May 14, 2002

This dissertation is a historical and theoretical examination of writing assessment as social action. It begins with a historical overview of writing assessment as reform, focusing on the various ways in which writing assessments shape knowledge, subjectivities, and the university. It uses poststructuralist theory and educational measurement scholarship to argue for an understanding of writing assessment as progressive social action, an opportunity for teachers and administrators to reflect upon and change writing instruction. The latter part of the dissertation argues that understanding writing assessment as social action can help compositionists design and implement ethical assessment technologies.



The dissertation is divided into five chapters, covering writing assessment history, theory, practice, and ethics. Chapter One gives a historical overview of writing assessment and argues that it has always been a form of social action. Chapter One also looks to contemporary writing assessment theory and practice to explore how writing assessment might become a means of proactive social change within writing programs, universities, and the culture at large. Chapter Two explores through poststructuralist theories of power and education the role that writing assessment has played within.

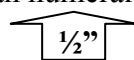
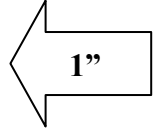
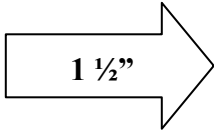
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universities and culture at large. In particular, it highlights the role of human agency in changing the universities and the culture at large. In particular, it highlights the role of human agency in changing the way that writing assessments (re)produce institutional and cultural systems.

While Chapters One and Two are more theoretical in nature, Chapters Three and Four center on writing assessment practice and on the consequences that writing assessments have on programs, institutions, and individuals. Chapter Three focuses on a single assessment technology, the writing portfolio, to examine the extent to which writing assessment can be proactive social change in practice. And Chapter Four links writing assessment as social change to ethical inquiry, arguing that vigorous inquiry into the validity of writing assessments—including their social consequences on individuals and writing programs—is imperative research to conduct, as it is a means of reflecting upon and changing the course of writing assessment.



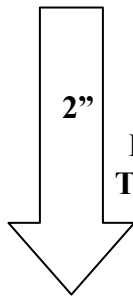


Illustration G
Thesis Abstract

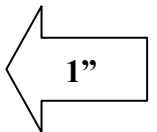
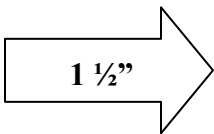
ABSTRACT

A COMPARISON OF BRIEF, SINGLE-SESSIONS OF PHYSICAL ACTIVITY
AND RELAXATION/MEDITATION ON AFFECTIVE RESPONSES OF FEMALE
UNDERGRADUATES

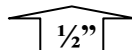
Paul G. Salmon

December 8, 2003

This study compared brief, single sessions of physical activity (PA, self-paced treadmill walking) and relaxation/meditation (*RIM*, the 'Body Scan') on positive and negative affect and anxiety measures in female undergraduates. Both were predicted to reduce negative and enhance positive affect. Differential effects of PA and RIM were predicted for participants with predominantly cognitive or somatic anxiety symptoms. Forty-six undergraduates were randomized to PA or RIM interventions. Changes in affect (Positive and Negative Affect Scale, PANAS) and anxiety (Spielberger State / Trait Anxiety Inventory) were assessed using multivariate, repeated measures statistics. Both PANAS Negative Affect & ST AI anxiety scores declined following PA, but PANAS positive affect also declined. Similarly, RIM significantly reduced ST AI and PANAS Positive Affect scores, and (marginally) PANAS negative affect. Anxiety reduction was greatest following RIM for participants with cognitive anxiety symptoms, but the complementary prediction concerning *PA* and somatic symptoms was not supported.



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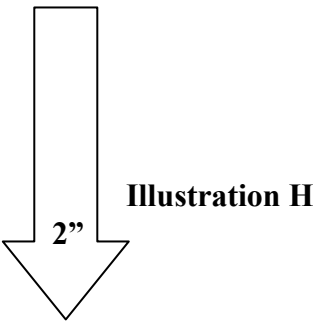
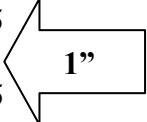
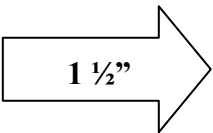
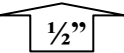


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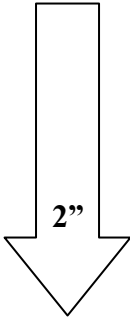
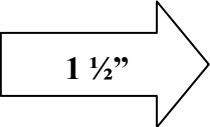


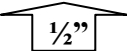
Illustration I

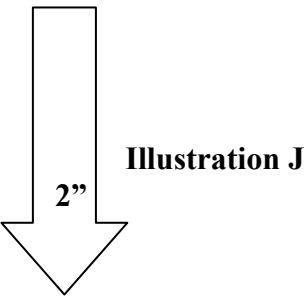
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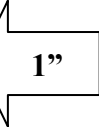
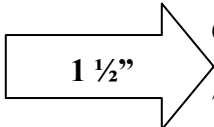
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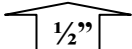


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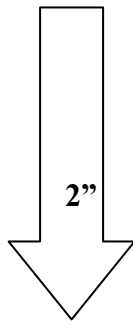


Illustration K

CHAPTER III

CARBON AND KEVLAR[®] FIBERS

Morphology of Carbon and Kevlar[®] Fibers

General

A characteristic of considerable importance is the morphology of the void phase embedded in carbon and Kevlar[®] fibers. These voids range in size between 1-30 mm (Barton, 1994), and tend to be elongated in shape with the length of the void being on the order of 1.5-6 times the void width. The mechanism by which the void phase forms is dependent upon both processing conditions and material characteristics (Anson & Brown, 1996). In the case of wet spun fibers, such as Kevlar[®], the voids are formed as the solvent leaves the polymer during coagulation (Smith, 2000). The ellipsoidal shape of the voids is due to the applied tensile force during this process.

The micro void phase in pitch-based carbon fibers has a number of sources. The formation of the structure is refined, and volatiles are given off (Barton, 1994). Polyacrylonitrile (PAN) based fibers often have similar structures with voids arising both from wet spinning and from carbonization. The more needle-like appearance of the voids in PAN based fibers are attributed to the high tensile forces applied to the fibers during spinning and carbonization (Jones, 2000). The appearances of voids in the PAN based fibers also contribute to the lightness of the fibers in virtually all applications. This property has contributed to the universal acceptance of PAN based fibers in

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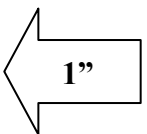
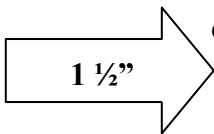
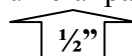


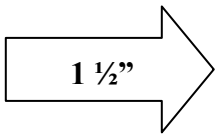


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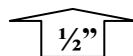
Table 4

Flexor Carpi Radialis Enthesis Measurements

Measurement (mm)	Left			Right		
	n	Maximum	Minimum	n	Maximum	Minimum
Length	246	17.00	8.00	234	16.00	7.00
Width	245	7.60	3.10	234	9.00	2.50
Height	246	5.00	1.50	231	5.00	1.50



Extensor Carpi Radialis Brevis Two (E2B) is one of the two insertions measured for this muscle, and is located on the dorsal ulnar side of a proximal MC2, just across from the ERL insertion. E2B is a raised bony area that runs obliquely across the ulnar fork of the bone (see Figure 22). The entheses is narrower distally and wider proximally. The oblique axis was used as the length measurement with width the average of several measurements taken at equal distance perpendicular to the length.



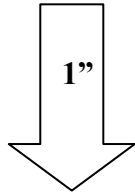


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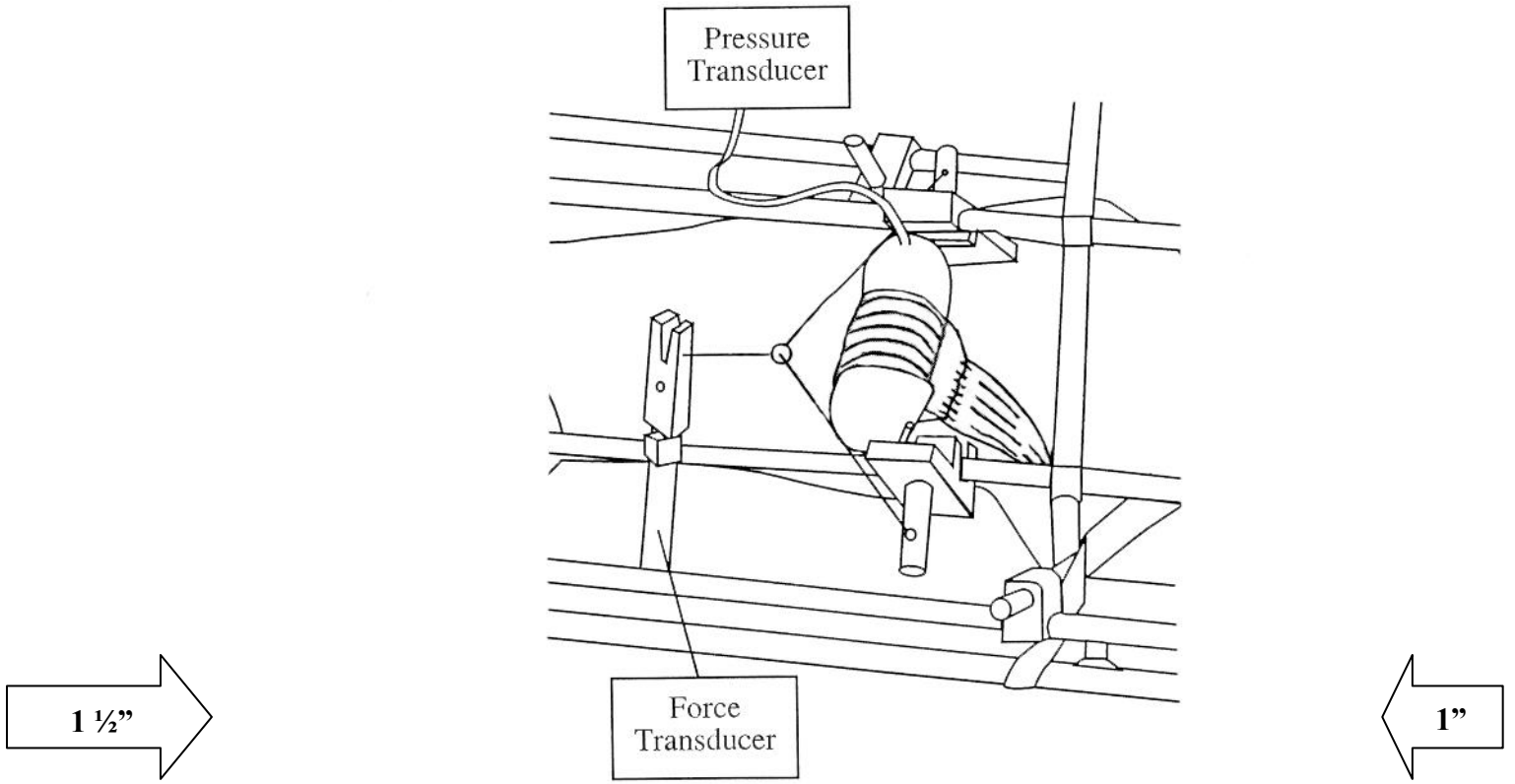
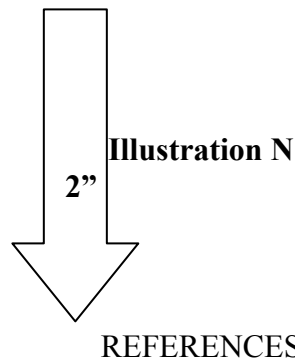


Figure 1. Schematic illustration of the contractile force measurement system.

Circumferential squeezing of the LDM is measured by the Pressure Transducer and longitudinal pull of the LDM is measured by a Force Transducer. See text for further explanation.

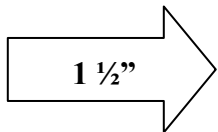
(**Note:** types of figures may include: graphs, charts, dot maps, drawings, photographs, etc.)



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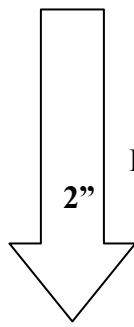


Illustration O

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REFEREED JOURNALS

BOOKS AND SYMPOSIA

INVITED PRESENTATIONS

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