Study Guide 16: How to Achieve Success with Your Dissertation

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Contents

(1) Overview and learning outcomes

This study guide is aimed at those planning to write up a dissertation for a higher degree. It is very important to plan well ahead to ensure the dissertation is completed satisfactorily and to time. The guide will cover some basic considerations and offer practical tips. After reading this guide you should be able to:

- Recognise the importance of planning the activity
- Be familiar with tools for planning the various stages in preparing the dissertation
- Recognise common problems in writing

- State what is good writing
- Be familiar with the structure of the dissertation and the order of its writing
- Understand what makes good tables/figures
- Be familiar with strategies to manage references
- Be familiar with the review process
- Cite considerations if planning to publish work from the dissertation

There are many sources of advice on the internet on preparing a dissertation (thesis). The advice in this study guide is based on some of these sources but also on the personal experience of the author as a student, a supervisor, and an examiner (MSc, PhD and MD).

Associated NHS Fife study guides:
17 How to write an abstract
18 How to write up and get your work published

(2) The importance of planning

The task of completing a dissertation is always daunting and you must not underestimate the effort and time needed to complete the work. Having finished your data collection and analysis you may have, say, 6 months to write up your work but, in reality this may be no more than one day a week, and about 8 hours each day, which translates to 26 days or 208 hours! This assumes you will not be taking any annual leave, or suffering any illnesses and requiring time off work for yourself or your dependents etc. So, be circumspect about the time needed and plan well ahead at the very start of the project. Break up the task into bite-size activities and identify which parts of the dissertation can be completed in draft form early. Remember, you will already have sections on the background, literature review and methodology from your initial proposal having been approved by the University supervisor and, possibly, ethics committee. The drafts can be tied together once the dissertation is nearer completion.

Plan out the available time and be realistic allowing for holidays and unforeseen circumstances. Build in additional periods to catch up between activities. Set deadlines and stick to them. Use appropriate tools to monitor the timescales. These may include a GANNT chart, a timetable of project milestones, time logs, diaries, ‘to do’ lists.

(2.1) GANNT chart

A GANNT chart is a visual reminder to plan and judge progress (Figure 1). The chart can be broken up by months, or by weeks in a series of charts with individual weeks blocked out for catching up from delays, holidays, unforeseen circumstances etc.

Figure 1. An example of a GANTT chart for a 12-month MSc project (starting in July 2020, month 1 in the table). This chart includes a 6-month run in to develop the project and obtain the necessary permissions (University, ethics, and NHS management).

Activity	Months																	
	-6	-5	-4	-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12
Develop proposal																		
Literature review																		
University approval																		
Write Pt info sheet																		
Ethics application																		
R&D approval																		
Annual leave (06/2020)																		
Recruit patients (07/2020)																		
Collect data																		
Analyse data																		
Prepare draft chapters																		
Introduction																		
Methods																		
Revise Intro/Methods																		
Results																		
Discussion & conclusion																		
Reference list																		
Final copy																		
Send chapters (review) *																		
Prepare final thesis *																		
Submit thesis *																		
Prepare papers *																		
*** Agree timetable with supervisor**																		

(2.2) Milestone chart

A milestone chart is a list of significant milestones, in time order, with an estimate of how much time is needed to reach a milestone, the date it should be reached and columns to indicate when it was achieved (Figure 2). Again, be realistic in determining the schedule and include allowance for annual leave.

Figure 2. A milestone chart from January 2020 using the example from Figure 1.

Date chart revised / completed ____ /____ /_____				
Milestone	Schedule (weeks)	Month ended (from January 2020)	Actual (weeks)	Achieved (✓) with date
Develop proposal	-12	March 2020		
Literature review	Ongoing	June 2021		
University approval	8	April 2020		
Write Pt info sheet	8	April 2020		
Ethics application	8	June 2020		
R&D approval	8	June 2020		
Recruit patients	20	November 2020		
Collect data	28	January 2021		
Analyse data	28	March 2021		
Annual leave	3	June 2020		
Prepare draft chapters				
Introduction	-	August 2020		
Methods	-	August 2020		
Revise Intro/Methods	-	February 2021		
Results	8	April 2021		
Discussion & conclusion	8	April 2021		
Reference list	(44)	May 2021		
Final copy	8	May 2021		
Send chapters (review) *****	-	September 2020		
Send chapters (review) *****	-	November 2020		
Send chapters (review) *****	-	January 2021		
Send chapters (review) *****	-	February 2021		
Send chapters (review) *****	-	March 2021		
Send chapters (review) *****	-	April 2021		
Prepare final thesis *****	8	May 2021		
Submit thesis *****	-	June 2021		
Prepare papers *****	8	June 2021		

(2.3) Time management

Good time management is critical to success in preparing a dissertation. Try these tips:

1. Plan your day hour by hour.
2. Decide when you are most productive and protect this time. If it is in the morning consider getting up an hour early to work rather than finding time at the end of the day when you may be too tired.
3. Break down large activities into 'bite-size' parts.
4. Set yourself a goal to complete in each work period.
5. Be resolute and disciplined in achieving your set goals.
6. When you achieve the goal write a 'to do' list so you can pick up on where you left off.
7. Avoid perfectionism. Your work can be polished off later as you join sections of text.
8. Avoid distracting activities. Remain focussed on the task in hand.
9. Be alert to other people mismanaging <u>your</u> time.

(3) Tips before you start writing

Remember the purpose of the dissertation which, for an MSc is to demonstrate to your supervisor and University examiners that you have learned from the modules you have attended. They will want to see that you can devise a research question, design a study to address the question, justify your choice of methods, collect, analyse, and interpret data to answer the question, set the findings in context, identify the strengths and weaknesses of your study and, finally, make recommendations based on your findings. It is unusual to be asked to attend a viva for an MSc but, if this is required you will be expected to defend your work. These ideals apply to a PhD but this should also contain original work that builds on the evidence on the topic. In addition, you will have to attend a viva and be expected to discuss the topic knowledgeably and to defend your study.

Familiarise yourself with the University's guidance on preparing the dissertation. What do they require in relation to:

1. The structure of the thesis,
2. Any declaration of originality,
3. The word count(s),
4. The margins,
5. Pagination,
6. Text justification,
7. Spacing and font,
8. The citation of references (Vancouver or Harvard style).

What are the submission dates? If hard bound copies are required check how many are needed and how long the binders will need to bind the work? You must allow for these delays when devising your time management plan.

Set up a format in your word processing package to conform to the University requirements regarding text spacing and margins. For example, they may specify a right-hand margin of 2.5 cm but a left hand margin of 4 cm to allow for binding. The default margin in WORD is 2.5 cm, both sides, but if you prepare your drafts with these margins you may find the pagination regarding page breaks, section breaks, placement of tables and figures becomes unsatisfactory on formatting the final thesis according to the University's specifications.

It may be advisable to look at dissertations submitted by previous students but, if doing this find a dissertation that was awarded a merit or distinction!

Finally, assemble the tools needed, including print cartridges, paper etc and replenish stock used to ensure you always have spare capacity. You can almost guarantee that if you are rushing to complete a draft late on a Sunday night then that will be the time your print cartridge runs out of ink!

Keep in mind the saying:
"If there is a 50:50 chance of something going wrong then nine times out of ten it will"

(4) Tips once you start writing

It is best to write the dissertation as you progress through the project. You do not have to start with a blank sheet. You have already completed the background, the introduction and devised the methods in the proposal to the University and ethics committee. These sections of text form the first draft of the relevant chapters and can be started early in the process of preparing the final dissertation.

Create a 'Discussion' folder early on to input odd notes and comments as you think of them, for example, from reading the literature, or as your analysis progresses. These notes can be helpful as aide memoires when writing the discussion chapter.

Keep a pad and pencil by your bedside as you may get some of your best ideas in the middle of the night! Write them down as they arise and do not rely on your memory as that brilliant idea you had at 3.30 am may have flown once the morning arrived. Also, writing it down will help you get back to sleep! Such moments of inspiration can arise at any time so make sure you can write down those thoughts as soon as possible.

The literature search will have been started but must be continued throughout the project. Major database platforms, such as OVID, will have a facility to set up an 'Auto Alert' that will re-run a search strategy at selected intervals and email the results of any new publications to an email address. These features enable you to continue the literature review proactively. Seek advice from the institution's librarian!

(4.1) Maintain file backups

It is essential to back up your drafts. After each session save the file with the following format: *filename(year-month-day)*. For example, Chapter1(2015-04-27). On revising the file on another day create a new version with that day's date in the title and retain the previous version. Saving files in this format ensures that the various drafts are listed in date order. For example:

Chapter1(2015-04-27)
Chapter1(2015-05-03)
Chapter1(2015-07-04)

In comparison, using a date format such as *270415* is likely to result in files listed out of date order:

Chapter1(030515)
Chapter1(040715)

Chapter1(270415)

By retaining previous versions, you can revert to an earlier version if you suffer a catastrophic error in saving a file or if your computer 'crashes.' Do not worry about cluttering up your file space as computers these days have more than enough capacity.

Finally, create further backups of your draft chapters onto a data stick and email them to yourself or another convenient addressee.

(4.2) Problems with writing

Common problems identified when writing include:

1. I find it difficult to start writing.
2. I have too many ideas.
3. I spend too much time thinking.
4. I spend too much time gathering information.
5. I write too much or too little.
6. I do not have enough time to write.
7. I spend too much time rewriting and do not know when to stop.
8. I do not know what good writing is.
9. I get 'writer's block.'

Source: Adapted from Albert T. The problem with writing. *BMJ (Careers)*, 2002; S180

Some people prefer to write with pen and ink whereas others prefer to compose at the computer. The important point is to start putting your thoughts down as soon as possible. By all means revise the text as you progress but do not spend too much time going over it repeatedly. The process of tying it together to improve its flow can come later as you approach the final revisions of each chapter.

(4.3) Writer's Block

'Writer's block' hits us all. This can occur on getting started, mid-stream or near finishing. The best solution is not to struggle on but to think more about what you want to say and to write less. Write what you can, then shelve it and resurrect it days later to continue the composition. A new day usually brings a fresh approach, with fresh ideas.

(4.4) Writing style

Write in good English with a style that makes it readable. Write with an international audience in mind as your work may be read by individuals who are not native English speakers. Tips for good writing include:

1. Write short, concise sentences (less than 20 words).
2. Use active not passive tense. *For example, 'nurses treat patients' (active tense) rather than 'patients are treated by nurses' (passive tense).*
3. Use positive rather than negative statements. *For example, '90% of students passed' rather than 10% of students failed'.*
4. Use simple words. *For example, 'this table shows...' rather than 'this table demonstrates...'*
5. Avoid needless punctuation.

6. Do not mix numbers and words, decimals, and fractions. *The usual convention is to write the number as a word if ten or less but as the actual number if more than 10.*
7. Avoid technical jargon (where possible).
8. Avoid needless words.
9. Avoid imprecision and irrelevance.
10. Avoid double negatives. *For example, 'hypertension is common' rather than 'hypertension is not uncommon.'*
11. Tie the chapters together to improve the flow of the account.

Check the readability of your text using the word processor's readability statistics. Alternatively, use another source such as the Gunning Fog Index Readability Score:

https://readable.com/readability/gunning-fog-index/

http://gunning-fog-index.com/

(4.5) The word processing package

Probably the commonest word processing package is Microsoft WORD©. Features include a spell and grammar check and auto-correction. But these can lead to problems as the default option is US spelling (for example, edema not oedema, hemoglobin not haemoglobin, fetus not foetus, standardization not standardisation etc). These features are convenient if you are preparing a paper for publication in a US journal but less convenient if preparing a dissertation for a UK institution. However, the spell check can be set to UK English by changing the default from English (US) to English (UK) on the 'Set language' button on the 'Review' tab on the toolbar.

Beware of advice on grammar as the suggested revisions are not always correct. Similarly, when a word is misspelt the auto-correction facility can sometimes create problems with confusion over words, for example:

from	→	form
trial	→	trail
untied	→	united
compiled	→	complied
discreet	→	discrete
compliant	→	complaint
marital	→	martial

Make good use of the page break and section break facilities rather than adding 'carriage returns' to ensure the desired layout of text, tables, and figures. Use the thesaurus (synonyms) facility to find substitute words with the same meaning.

Use the tables function in WORD to create the contents table. Later, as the dissertation is completed you can add in the page numbers, suppress the grid lines, and format the table.

Draft form:

Chapter		Page number
3	Methodology	xx
3.1	Development of the questionnaire	xx
3.2	Piloting the questionnaire	xx
3.3	Selection of patients	xx
3.4	Anthropometric measurements	xx
3.5	Statistical analysis	xx

Final form:

Chapter		Page number
3	Methodology	37
3.1	Development of the questionnaire	37
3.2	Piloting the questionnaire	39
3.3	Selection of patients	42
3.4	Anthropometric measurements	43
3.5	Statistical analysis	44

(5) Preparing the dissertation

The usual structure of the dissertation is:

- Title
- Acknowledgements
- Abstract (or Summary, sometimes called an Executive Summary)
- Contents page
- List of abbreviations
- Introduction
- Literature Review (optional separate section or merged into Introduction)
- Methodology (not just Methods used)
- Results } *may be combined in one chapter*
- Discussion } *as 'Analysis & Discussion'*
- Conclusion
- References
- Appendices

The order in which chapters are composed may not follow the order above. For example, you may choose a working title initially and prepare the chapters in the following order:

- Literature Review
- Methodology
- Introduction
- Results
- Discussion
- Conclusion
- Abstract (or Summary)
- Acknowledgements
- Assemble references / appendices

(5.1) Literature Review

The literature review sets your topic in context, acknowledges previous work, and should also help justify your choice of research question(s). It should be comprehensive with careful selection of search criteria. In identifying relevant papers you should always look through the reference section of each paper to find references you may have missed. Each paper you find will have its own strengths and weaknesses. You will be expected to undertake a critical appraisal of each paper (see the NHS Fife study guide on *'How to Critically Appraise a Paper'*). Try to remain focused as it is easy to get distracted on finding papers of general interest that may not be relevant for your study. A reference manager (for example, Refworks, Endnote) can be useful to help organise and manage references. Searches in Medline and other databases can be downloaded direct into the reference manager which can also help format the references once inserted into the text. However, there can be both advantages and disadvantages in relying on a reference manager and, at this stage it is best to consult the librarians at your academic institution (or workplace, if the NHS) for advice on the reference manager they recommend and for guidance and training in its use.

(5.2) Methodology

The methodology may be the first and easiest chapter to complete as you can adapt what has already been written in the proposal and ethics application. For an MSc project you need to justify the choice of methods, hence the chapter may be entitled 'Methodology' and not just 'Methods.' There should be a comprehensive description with sufficient detail to allow study replication. The components may include:

- Study design
- Study site or sites
- Patients or Subjects (participants)
- Recruitment issues
- Experimental procedures / Measures / Quality control issues
- Data collection
- Data analyses
- Research governance, permissions, ethics

(5.3) Introduction

This chapter sets the scene and will include reference to the previous literature. As with the methodology chapter you may adapt what has already been written in the dissertation proposal and ethics application. It should end with a statement of the research question(s), the aims and objectives of the study. Later, it may be necessary to revise the introduction to fit with the discussion chapter, depending on your findings.

(5.4) Results

This chapter will report the results but, in general, should not interpret them as this will be part of the discussion chapter. Any statistics estimating a parameter should be given with their confidence interval (for example, 95%) and any comparison between groups should state the actual P-value and not just a statement such as $P<0.05$ or $P>0.05$. For qualitative studies the results will appear as anonymised quotations. Quantitative data can appear in tables or as figures. Avoid unnecessary repetition between text, tables and figures. Tables require careful preparation.

(5.4.1) Preparation of Tables

Tables should stand alone and be simple, well laid out and informative. Each should have a descriptive title and, where needed, be supported with footnotes. Here is an example of a table taken from a study on the attitudes of patients in a general practice about exercise and keeping fit.

Table 1. Barriers to exercise in respondents aged 40 – 60 years who did not think they did enough exercise to keep fit.

Barrier	Men (n=431)		Women (n=479)	
	n	%	n	%
Lack of transport	22	5.1	38	7.9
Lack of money	89	20.6	104	21.7
Lack of leisure time	165	38.3	195	40.7
Illness or disability	117	27.1	88	18.4
Lack of motivation	195	45.2	237	49.4
Lack of easily available facilities (at work)	39	9.0	58	12.1
Lack of easily available facilities (in community)	30	7.0	40	8.4
Other	14	3.2	36	7.5

In this example the order in which barriers are cited is taken from the order in which the questionnaire was laid out. All the necessary information is contained in the 5-column table but it can be simplified with the barriers re-arranged in order of importance and the columns reduced in number to improve the table's readability:

Barrier	Men (n=431) %	Women (n=479) %
Lack of motivation	45.2	49.4
Lack of leisure time	38.3	40.7
Illness or disability	27.1	18.4
Lack of money	20.6	21.7
Lack of easily available facilities (at work)	9.0	12.1
Lack of easily available facilities (in community)	7.0	8.4
Lack of transport	5.1	7.9
Other	3.2	7.5

The column with 'n' is redundant as the information necessary to calculate the actual number of respondents can be derived from the percentage cited and the base number given for each gender.

Some general advice on laying out tables:

(1) Order rows and columns by size with the largest values at the top left-hand corner.
(2) Numbers are easier to compare when scanned vertically than horizontally
(3) Make good use of space and lines and avoid large gaps
(4) Consider including row and column averages
(5) Break large tables into smaller ones

(5.4.2) Preparation of Figures

Data can be presented in a variety of visual formats that, like tables, should stand alone with a fully descriptive title and labelling. Categorical data (data in categories) such as nominal, ordinal, or discrete measures can be presented in pie charts or bar charts.

Data are described as nominal if there is no natural order. Examples include marital status, smoking habits, religion, eye colour and nationality.

Data are described as ordinal where there is an order but the magnitude of the difference between adjacent categories is not identical. Examples include results from a road race. Runners are categorised as first, second, third etc. The winner may have run the race in 60 seconds, the person coming second may have taken 62 seconds (2 seconds behind), and the person in third place may have taken 75 seconds (13 seconds behind the person coming second). Another example is where patients are asked to report pain on a categorical scale of ‘no pain’, ‘a little pain’, ‘a lot of pain’, ‘the worst imaginable pain’. We cannot assume the difference between being in ‘no pain’ and ‘a little pain’ is the same magnitude as the difference between being in ‘a little pain’ and ‘a lot of pain’.

Data described as discrete are integers (whole numbers) where the magnitude of the difference between adjacent categories is identical. Examples include the number of children in a family (0, 1, 2, 3, 4, 5 etc), or the number of beds on a hospital ward. The difference between 3 and 4 beds (i.e. 1 bed between adjacent categories) is the same as the difference between 6 and 7 beds.

A pie chart can report the absolute number of cases or a percentage of cases. It is generally recommended that the number of ‘slices’ should not exceed eight. The pie chart can be in colour or in black and white (with shading) and be ‘exploded’. For example,

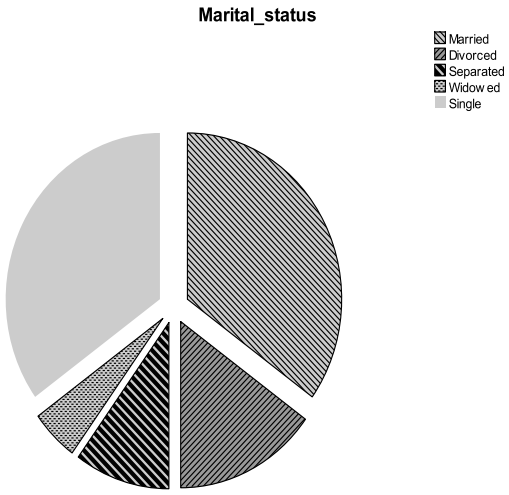


Figure 3. Marital status in 40 women with insulin-dependent diabetes.

A choice of colours can be attractive but the slices may not appear distinct when printed in black and white. In addition, 8% of Caucasian men are red-green colour blind! In general, it may be best to avoid use of colour in your charts.

An alternative method of presentation is in a bar chart with vertical or horizontal bars. The axes can be set to any convenient range and relate to percentages or an absolute number of cases. The number of cases can be given in the title of the figure or in the body of the figure. Examples of different formats are in Figure 4.

Continuous data such as height, weight, age can be visually represented as a distribution (a histogram) or as a box and whisker plot. These plots are particularly useful to see if the distribution of the data fits with a bell-shape (Normal or Gaussian) or is skewed. The statistical treatment of such data depends on its distribution (for further details see the NHS Fife study guide *'Introduction to Medical Statistics'*). Many measures in medicine are bell-shaped in distribution but not all. Examples of skewed distributions include many quality of life measures and skin fold thickness (Table 2, Figures 5 and 6).

Figure 4. Marital status in 40 women with insulin-dependent diabetes.

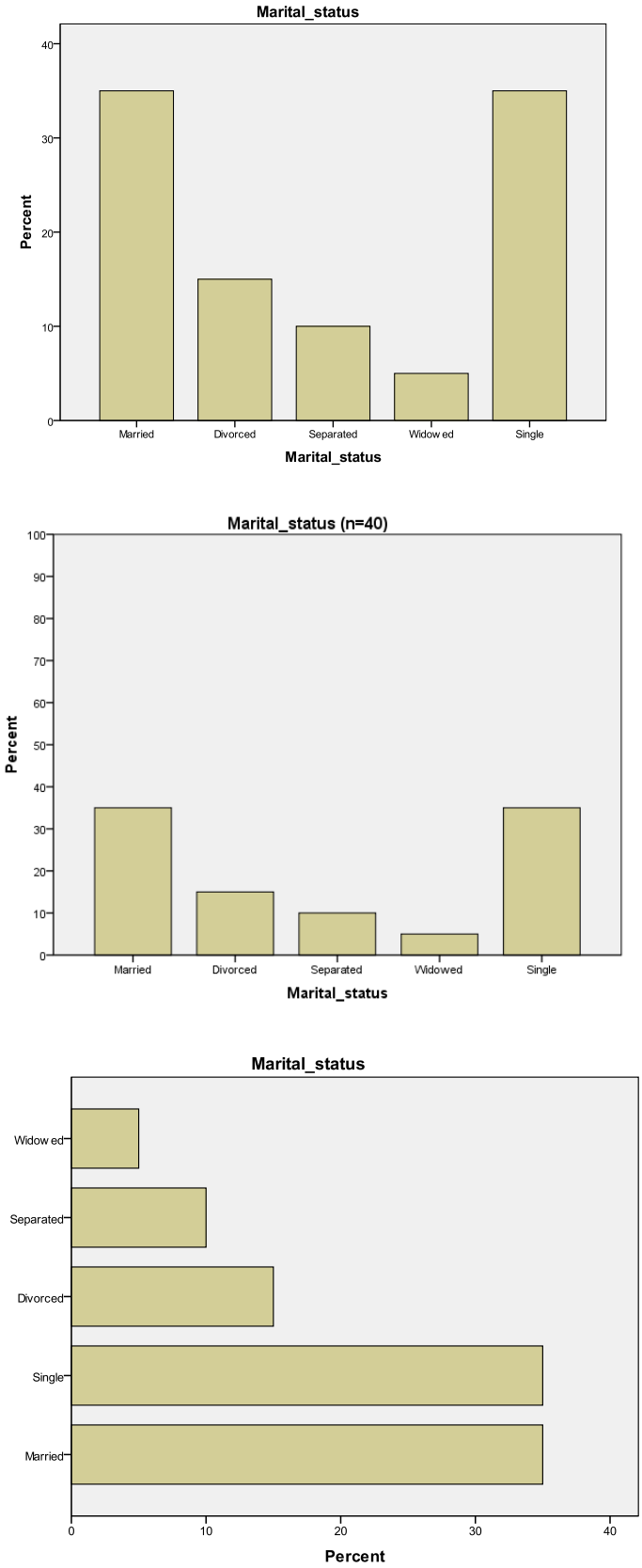


Table 2. Summary descriptive statistics for the biceps skin fold thickness in 678 working men.

		mm
Mean		5.64
Median		5.20
Standard deviation		2.34
Minimum		2.0
Maximum		20.4
Percentiles:	25th	4.17
	50th	5.20
	75th	6.80

Figure 5. A histogram showing the distribution of the biceps skin fold in 678 working men.

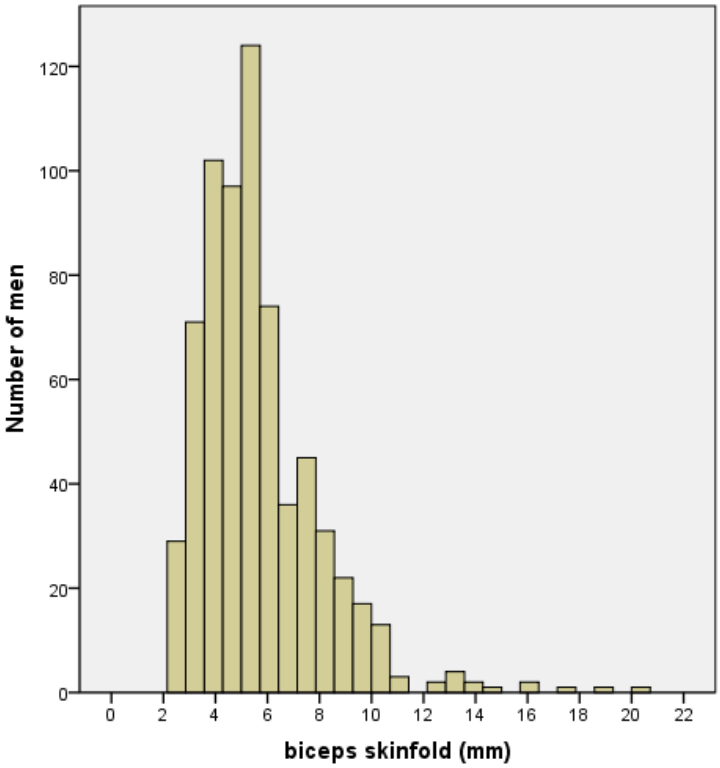
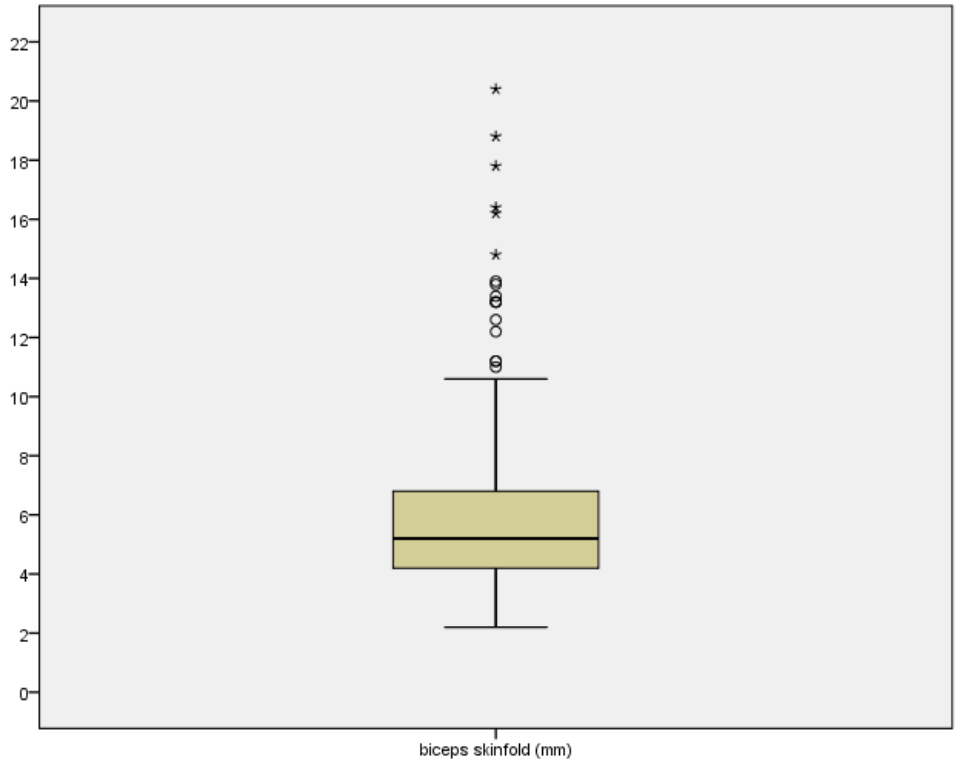


Figure 6. A box and whisker plot showing the distribution of the biceps skin fold in 678 working men.



The lower and upper borders of the shaded box represent the 25th and 75th percentiles, respectively (4.17 and 6.8). The thick line across the box represents the median (5.2). The whiskers usually represent the minimum and maximum values but, in this example the lower whisker represents the minimum value (2 mm) and the upper whisker (10.8 mm) represents 2.5 times the difference between the median and the 75th percentile. The symbols above the upper whisker are individual outliers marked differently according to their degree of difference from the median.

(5.5) Discussion

This is your opportunity to 'shine.' Open your discussion folder and review the notes made earlier so you are not starting with a blank sheet. Decide what are to be the key messages. Try writing three or four sentences on 'What do we already know about this subject?' and 'What does this study add?' These will help you focus whilst composing the chapter. It is recommended practice to present the discussion in five sections:

1. State the principal findings but do not over-interpret the results.
2. Acknowledge the strengths and weaknesses of your study. Be realistic and identify potential biases. Can you justify your choice of methods?
3. Compare your findings with other published work.
4. State the implication of your findings for policy and practice, including any recommendations.
5. State the implications for future research and identify any unanswered questions.

Sections 2 and 3 can be interchanged in their order.

(5.6) Conclusion

Round up the topic preferably in one or two paragraphs and reiterate any recommendations but be realistic in what is achievable. Relate your conclusions to the study aims and objectives. This section is different from the abstract.

(5.7) Abstract

The abstract (or executive summary in some dissertations) is very important because it may be the only part that is read by the casual reader. It should stand alone as a comprehensive description of the study, its background, results, and conclusions. Check the University guidance on its style (structured or unstructured) and word count though do not restrict your first draft as this can be précised later. The components should be:

1. Background
2. Objective(s)
3. Study design
4. Setting
5. Participants
6. Main outcome measures
7. Principal findings
8. Conclusions and recommendations where it is very important to answer the question, 'so what'

(5.8) Acknowledgements

Acknowledge everyone who has helped with your study including your supervisor, the participants, any funding sources, and any 'significant others' who may have provided advice on study design, participant recruitment, data analysis, review of manuscripts etc. Your acknowledgements may include colleagues, family members, friends etc. Some actual examples from previous dissertations seen are:

- *I'd like to thank my husband who took no interest in this work thus facilitating its completion*
- *I'd like to thank my wife and children without whose help this work would have been completed a long time ago*
- *I'd like to thank my partner who helped in humorous ways (mis-typed 'numerous')*

(5.9) References and Appendices

You should already be familiar with the University guidance on the style required for citing references. The two principal formats for citing references are:

1. Vancouver style where references are numbered in the order in which they are cited in the text.
2. Harvard style where references are cited in the text by the author and year of publication and then listed alphabetically in the reference section.

Both styles have advantages and disadvantages. The Vancouver style is usually preferred by journal editors as it ensures the text is less 'cluttered' and is easier to read. Reference numbers are cited as superscripts or as numbers in brackets (round or square). For example: Lung capacity is related to age, stature, gender and ethnicity.[4] However, the Harvard style is often preferred by University MSc committees as it cites names and publication dates in brackets. For example: Lung capacity is related to age, stature, gender and ethnicity (Jones and Sullivan, 1997). If an author, or group of authors has published two papers in the same year these are cited as (Jones and Sullivan, 1997a) and (Jones and Sullivan, 1997b).

Listing the references is a relatively easy task once the chapters appear in a single document and references have been assembled in a reference manager. However, it

is best to consider carefully whether use of a reference manager is the best strategy for your study. Problems may arise in the future over any uncertainty concerning compatibility of updated versions of the software. Think carefully before you decide to use a reference manager.

If you are not using a reference manager then create a table with two columns, if using the Vancouver style, and with one column, if using the Harvard style. Leave the grid lines clear though these can be suppressed later once the final copy is complete. Cite all the authors (even if the dissertation instructions advise otherwise). The reason is that later you may wish to publish an article from your dissertation and the journal instructions may cite a different format. Any preferred line spacing (e.g. double spaced) of references can be applied once the dissertation is completed. When listing a reference check the original citation for accuracy rather than just copying it from another paper.

Here is an example of a reference list:

Vancouver style (number order):

1	Perkins FM, Kehlet H. Chronic Pain as an outcome of surgery. A review of predictive factors. Anesthesiology 2000; 93:1123-33.
2	Kehlet H, Jensen TS, Woolf CJ: Persistent postsurgical pain: Risk factors and prevention. Lancet 2006; 367:1618 –25
3	Bhalang K, Sigurdsson A, Slade GD, Maixner W. Associations among four modalities of experimental pain in women. J Pain 2005; 6: 604–611.
4	Weissman-Fogel I, Granovsky Y, Crispel Y, Ben-Nun A, Best LA, Yarnitsky D, Granot M. Enhanced presurgical pain temporal summation response predicts post-thoracotomy pain intensity during the acute postoperative phase. J Pain. 2009; 10(6):628-36.
5	Werner MU, Duun P, Kehlet H. Prediction of postoperative pain by preoperative nociceptive responses to heat stimulation. Anesthesiology 2004; 100(1):115-9.
6	Lundeberg T, Lund I, Dahlin L, Borg E, Gustafsson C, Sandin L. Reliability and responsiveness of three different pain assessments. J Rehabil Med. 2001;33: 279–283.
7	Riley JL, Robinson ME, Wise EA, Myers CD, Fillingim RB. Sex differences in the perception of noxious experimental stimuli: A meta-analysis. Pain 1998; 74:181–7
8	Matthews JN, Altman DG, Campbell MJ, Royston P. Analysis of serial measurements in medical research. BMJ 1990; 300: 230-235.

With grid lines suppressed:

1 Perkins FM, Kehlet H. Chronic Pain as an outcome of surgery. A review of predictive factors. Anesthesiology 2000; 93:1123-33.
2 Kehlet H, Jensen TS, Woolf CJ: Persistent postsurgical pain: Risk factors and prevention. Lancet 2006; 367:1618 –25
3 Bhalang K, Sigurdsson A, Slade GD, Maixner W. Associations among four modalities of experimental pain in women. J Pain 2005; 6: 604–611.
4 Weissman-Fogel I, Granovsky Y, Crispel Y, Ben-Nun A, Best LA, Yarnitsky D, Granot M. Enhanced presurgical pain temporal summation response predicts post-thoracotomy pain intensity during the acute postoperative phase. J Pain. 2009; 10(6):628-36.
5 Werner MU, Duun P, Kehlet H. Prediction of postoperative pain by preoperative nociceptive responses to heat stimulation. Anesthesiology 2004; 100(1):115-9.
6 Lundeberg T, Lund I, Dahlin L, Borg E, Gustafsson C, Sandin L. Reliability and responsiveness of three different pain assessments. J Rehabil Med. 2001;33: 279–283.
7 Riley JL, Robinson ME, Wise EA, Myers CD, Fillingim RB. Sex differences in the perception of noxious experimental stimuli: A meta-analysis. Pain 1998; 74:181–7
8 Matthews JN, Altman DG, Campbell MJ, Royston P. Analysis of serial measurements in medical research. BMJ 1990; 300: 230-235.

Harvard style (alphabetical order)

Bhalang K, Sigurdsson A, Slade GD, Maixner W (2005). Associations among four modalities of experimental pain in women. *J Pain*. 6, pp 604–611.
Kehlet H, Jensen TS, Woolf CJ (2006). Persistent postsurgical pain: Risk factors and prevention. *Lancet*. 367, pp1618 –25
Lundeberg T, Lund I, Dahlin L, Borg E, Gustafsson C, Sandin L (2001). Reliability and responsiveness of three different pain assessments. *J Rehabil Med*. 33, pp 279–283.
Matthews JN, Altman DG, Campbell MJ, Royston P (1990). Analysis of serial measurements in medical research. *BMJ*. 300, pp 230-235.
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With grid lines suppressed and 1.5 spacing with indent to second and subsequent lines to improve readability:

Bhalang K, Sigurdsson A, Slade GD, Maixner W (2005). Associations among four modalities of experimental pain in women. *J Pain*. 6, pp 604–611.

Kehlet H, Jensen TS, Woolf CJ (2006). Persistent postsurgical pain: Risk factors and prevention. *Lancet*. 367, pp1618 –25

Lundeberg T, Lund I, Dahlin L, Borg E, Gustafsson C, Sandin L (2001). Reliability and responsiveness of three different pain assessments. *J Rehabil Med*. 33, pp 279–283.

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Appendices can be useful to include, for example, any questionnaires used, complex tables of results, extra detail required on the methods, letters from the ethics committee or other permissions received.

(6) Considerations about the supervisor / proof reading

Early in the process check out the supervisor's availability as you plan out the drafting of the dissertation. Agree with the supervisor a timetable of submitting draft chapters, and receiving his/her feedback. Supervisors will have their own deadlines and will be unavailable when on holiday, on any planned sick leave, attending conferences or if on a sabbatical. It is likely that the supervisor will have more than one post-graduate student so the pressure on their time may be considerable. Many drafts may be necessary and the task of merging the various chapters as the dissertation nears completion can be time consuming. Ensure you have proof read any drafts submitted to the supervisor as it is not their role to correct your spelling and grammar. Use the

spell check facilities in your word processing package and perhaps ask a colleague to read the draft for content and errors. It is easy to miss spelling errors. Try reading these paragraphs:

> I cdnuolt blveiee that I cluod aulaclty uesdnatnrd what I was rdanieg. The phaonmneal pweor of the hmuan mnid, aoccdrnig to a rscheearch at Cmabrigde Uinervtisy, it dseno't mtaetr in what oerdr the ltteres in a word are, the olny iproamtnt tihng is that the frsit and last ltteer be in the rghit pclae. The rset can be a taotl mses and you can still raed it whotuit a pboerlm. This is bcuseae the huamn mnid deos not raed ervey lteter by istlef, but the word as a wlohe. Azanmig. I awlyas tghuhot slpeling was ipmorantt!
>
> Source: [Anonymous]. *Apparently, 55% of people can read this easily. How did you do?*

> 7H15 M3554G3 53RV35 7O PR0V3 H0W 0UR M1ND5 C4N D0 4M4Z1NG 7H1NG5! 1MPR3551V3 7H1NG5! 1N 7H3 B3G1NN1NG 17 WA5 H4RD BU7 N0W, 0N 7H15 LIN3 Y0UR M1ND 1S read thisR34D1NG 17 4U70M471C4LLY W17H 0U7 3V3N 7H1NK1NG 4B0U7 17, B3 PROUD! 0NLY C3R741N P30PL3 C4N R3AD 7H15.
>
> Source: [Anonymous].

Be aware that your supervisor may have very different ideas about the content and structure of your dissertation. Their criticisms may seem overly harsh but listen carefully to their advice as following it should ensure the final product meets the required standard. However, sometimes students and supervisors can have fundamental disagreements in which case these should be resolved early, if necessary by consulting the University post-graduate committee.

(7) Marking schemes

The supervisor and any external examiner will be working to a marking scheme set by the University MSc committee. You can ask your supervisor for the detail though this may be considered confidential. There will be criteria to judge a pass, a merit or a distinction and guidance on the marking range (Tables 3 and 4).

Table 3. A typical marking scheme.

Section	Marking (%)
Background to the question	10
Literature review (search criteria, critical review)	30
Methodology (including justification)	20
Results	10
Discussion (with regard to findings and past literature)	25
Conclusions	5

Table 4. Marking range used by a UK University for their MSc degree in health sciences.

Areas of academic activity: **Marking range:**	Knowledge & understanding of relevant ideas and methods	Ability to apply relevant ideas and methods to specific problems or issues	Originality, including ability to reflect critically on relevant knowledge and methods, and to develop clear and original arguments	Clarity of expression, presentation of material and overall structure (including referencing)
80-100%	Evidence of outstanding performance that fulfils and exceeds designated learning outcomes			
70-79%	Excellent performance relative to designated learning outcomes			
60-69%	Very good performance relative to designated learning outcomes			
50-59%	Good performance relative to designated learning outcomes			
40-49%	Satisfactory performance in designated learning outcomes			
<40% (Fail)	Poor evidence in each of the sections above			

(8) Proceeding to publication

Hopefully your work will be suitable for publication. If so, continue to prepare any papers as the probability of completing a paper lessens the longer you leave it after gaining your degree. Do not be tempted to stop writing once you have completed and submitted your dissertation as your literature review should be up to date so delaying the next step to publication can result in more work later. The challenge is to keep up the pressure on yourself and your supervisor to reduce your 20,000-word dissertation down to a 2000-word paper. Another challenge is the choice and order of authors. Your name should be first but to determine the order of collaborators prepare a chart with the authors listed across the columns in alphabetical order. Then, in a separate exercise ask each to identify which activities they contributed to. The preferred order then may be deduced from their responses (Table 5).

Table 5. An exercise to determine the order of authors on a paper.

Authors:	JB	DC	NC	JF	MK
Proposed order:					
Conception of idea				✓	✓
Study design		✓			
Grant application				✓	
Ethics application				✓	
Data collection	✓				
Literature review		✓		✓	
Data entry/coding			✓		
Data validation		✓	✓		
Data analysis		✓			
Preparation of charts / figs		✓			
Statistical advice		✓			
Writing / drafting text		✓		✓	✓
Commenting on drafts		✓	✓	✓	✓
Proof reading / formatting		✓			

Further guidance on preparing an article for publication is available in the NHS Fife study guide *'How to write up and get your work published'*.

(9) Summary

Undertaking a postgraduate degree at any time in life can be rewarding and intellectually stimulating. However, it is important that the research topic chosen is of special interest as, if not, the task may become tedious and the work easily abandoned with all the negative consequences on your career and finances. Remind yourself regularly why you are doing the degree and do not underestimate the time and commitment needed to complete the research. Stick to your deadlines. Writing the dissertation is time consuming, challenging, likely to be frustrating at times but ultimately very satisfying, particularly if it leads to a publication. Ultimately, completion of the dissertation will improve your discipline in tackling large projects and show to others that you can see a job through to its conclusion.

(10) Further Reading

There are many sources of advice on preparing a dissertation on the internet. Most Universities will provide their own guidance but if none is available then run a search in Google.

Albert T. The problem with writing. *BMJ (Careers)*, 2002; 325: S180

Plain English Campaign. www.plainenglish.co.uk (*see 'tools' including* 'A-Z of alternative words', 'How to write in plain English' and 'How to write medical information in plain English').

How to write well. A guide for health and social care students. June Keeling, Hazel M Chapman and Julie Williams (Editors). Open University Press, 2013.

The Gunning Fog Index Readability Score.

https://readable.com/readability/gunning-fog-index/

http://gunning-fog-index.com/