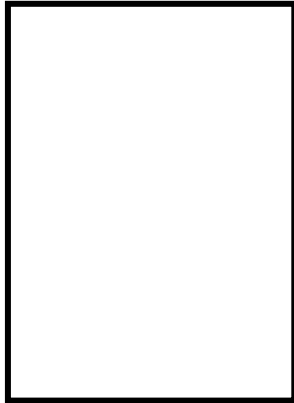
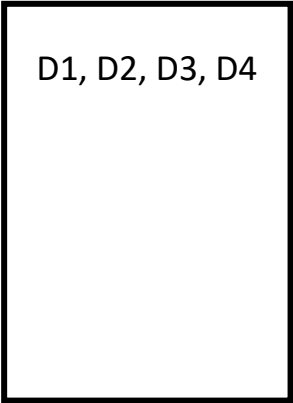
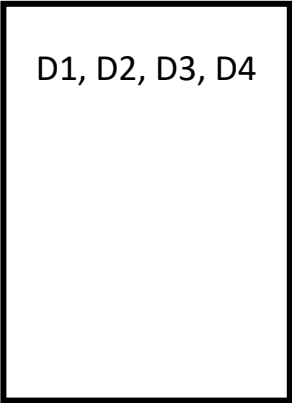
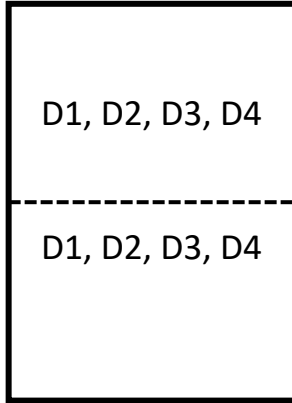
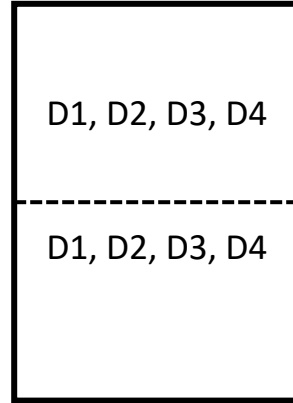
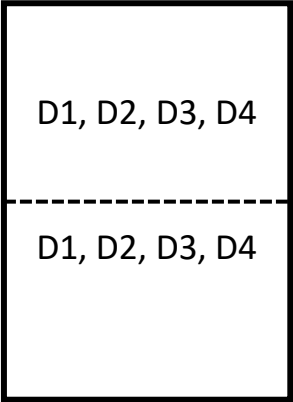
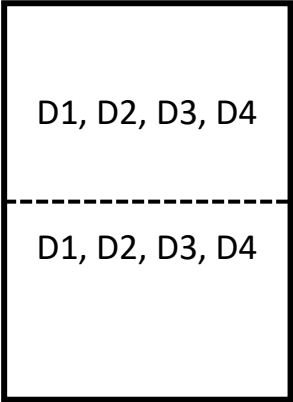
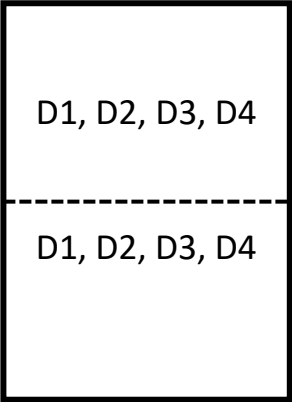
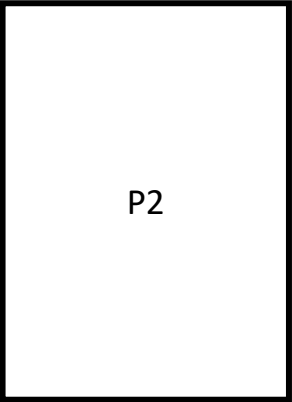
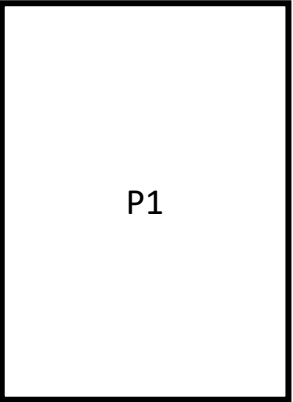




Developing the  
research  
D1, D2, D3, and D4

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Bibliography (all sources you have looked at) = D1  
Summary of skills and knowledge developed = D3

D1

- Do the things you planned to do in P2
- Record key findings (you won't fit them all in the folio)
- Bibliography can help with this (but not much)
- Having a summary of each topic is a good idea

## Development

- D1 Thorough and highly resourceful development of the research.
- D2 In-depth analysis of information and exploration of ideas to develop the research.
- D3 Highly effective development of knowledge and skills specific to the research question.
- D4 Thorough and informed understanding and development of one or more capabilities.

# D1

## Finding, reading , and highlighting source

## Para on key findings

Suzuki, W. (2018), The brain-changing benefits of exercise, [https://www.ted.com/talks/wendy\\_suzuki\\_the\\_brain\\_changing\\_benefits\\_of\\_exercise](https://www.ted.com/talks/wendy_suzuki_the_brain_changing_benefits_of_exercise), Accessed 15<sup>th</sup> November 2018

Notes on video:

- Prefrontal cortex:
  - Critical for focus and attention
- Temporal lobe:
  - Contains the hippocampus

A memory is formed by neurons having a brief moment of electrical activity between each other

Primary source area:

- She found that after she went to the gym, she was able to focus and maintain her attention on a mundane task longer than she had before
- Her long-term memory also seemed to improve to her, she could remember a lot more of what she was studying in her lab
- Literature all pointed out the exercise provides: better mood, better energy, better memory, better attention

How exercise transforms the brain immediately:

- It has an immediate effect because exercise immediately increases levels of neurotransmitters like dopamine, serotonin and noradrenaline
- The increase in these chemicals improves mood
- Exercise can increase the ability to shift and focus your attention and the improvement will last for up to two hours
- It also improves reaction times

The long-term effects of exercise:

- An increase in cardiorespiratory function enables long-term effects to happen
- "Exercise actually changes the brain's anatomy, physiology and function," Wendy Suzuki
- Exercise enables the production of new brain cells in the hippocampus, which in turn leads to an increase in volume, which in turn improves long-term memory
- Exercise improves attention dependent on your prefrontal cortex
- Good mood neurotransmitters increase and sustain for long-term improvements



The protective effects:

- Exercise gives the brain protective effects
- The hippocampus and prefrontal cortex are two areas most susceptible to neurodegenerative diseases and exercise gives a form of protection to this

Length:

- 3 to 4 times a week of 30 minute sessions

**Source details:**5 TEDwomen, 2017, The brain-changing benefits of exercise, Available at:

[https://www.ted.com/talks/wendy\\_suzuki\\_the\\_brain\\_changing\\_benefits\\_of\\_exercise](https://www.ted.com/talks/wendy_suzuki_the_brain_changing_benefits_of_exercise), Accessed 15<sup>th</sup> November 2018

**Reliability:**5 This source and the information contained in it are highly reliable because the author of the source is a professor of neuroscience and psychology at New York University. Also, the source is primary because she personally conducted the studies, meaning that the data can be trusted. The information is extremely current published on a credible website, all evidencing reliable material

**Validity:**5 This source is greatly valid to my research question because it discusses how the brain changes in anatomy, physiology and function in response to exercise and this includes memory and concentration. However, this source particularly focuses on memory and how changes in the brain's hippocampus structure and improve long-term memory.

**Key findings:**5 The main key findings from this source was the primary information which the neuroscientist gathered from observing herself in response to exercise. After a session in the gym, she felt more focussed and able to maintain her attention on a mundane task longer than she had previously. Furthermore, her long-term memory improved because she could remember information better. Also, from this source I noted that the increase in volume of the hippocampus is due to exercise enabling the production of new brain cells in the hippocampus, increasing the volume and improving long-term memory.

**Leads:**5 Leads are abundant from this source because it gives a brief overview of everything that exercise does to the brain, meaning that there are many paths to explore from the information gathered. One of these is the individual factors that lead to a change in the brain's anatomy, physiology and function in a beneficial way.

**Conclusion on source:**5 This source is a tremendously useful source, with trusted, reliable information and a great overview of changes that occur during and after exercise. This material will be used as foundation knowledge as I got into more detail about the changes

**Development of capabilities:**5 The literacy capability was developed because I had to improve my note-taking skills whilst watching a video. This also developed the critical and creating thinking capability because I had to understand, evaluate and synthesise the information before taking notes.

D2

-Analysing the sources  
you put in the folio

**Credibility:** Can you  
trust the author?

**Reliability:** Is the source  
well made and seems to  
be true

**Relevance:** Will the  
source help you answer  
all your question or just  
one part?

## Development

D1 Thorough and highly resourceful  
development of the research.

D2 In-depth analysis of information and  
exploration of ideas to develop the  
research.

D3 Highly effective development of  
knowledge and skills specific to the  
research question.

D4 Thorough and informed  
understanding and development of  
one or more capabilities.

# D2

## Analysis of reliability and validity

## Conclusion on usefulness

Suzuki, W. (2018), The brain-changing benefits of exercise, [https://www.ted.com/talks/wendy\\_suzuki\\_the\\_brain\\_changing\\_benefits\\_of\\_exercise](https://www.ted.com/talks/wendy_suzuki_the_brain_changing_benefits_of_exercise), Accessed 15<sup>th</sup> November 2018

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**Development of capabilities:**5 The literacy capability was developed because I had to improve my note-taking skills whilst watching a video. This also developed the critical and creating thinking capability because I had to understand, evaluate and synthesise the information before taking notes.

D3

-What **skills** did you develop in doing each process? (creating an experiment, talking to people for an interview, highlighting and organising information)

-How did your **knowledge** specific to your question develop?

## Development

D1 Thorough and highly resourceful development of the research.

D2 In-depth analysis of information and exploration of ideas to develop the research.

D3 Highly effective development of knowledge and skills specific to the research question.

D4 Thorough and informed understanding and development of one or more capabilities.



D3

How this source will lead to finding new knowledge

Conclusion on usefulness (includes how their knowledge developed)

<p>Suzuki, W. (2018), The brain-changing benefits of exercise, <a href="https://www.ted.com/talks/wendy_suzuki_the_brain_changing_benefits_of_exercise">https://www.ted.com/talks/wendy_suzuki_the_brain_changing_benefits_of_exercise</a>, Accessed 15<sup>th</sup> November 2018</p> <p>Notes on video:</p> <ul style="list-style-type: none"><li>- Prefrontal cortex:<ul style="list-style-type: none"><li>- Critical for focus and attention</li></ul></li><li>- Temporal lobe:<ul style="list-style-type: none"><li>- Contains the hippocampus</li></ul></li></ul> <p>A memory is formed by neurons having a brief moment of electrical activity between each other</p> <p>Primary source area:</p> <ul style="list-style-type: none"><li>- She found that after she went to the gym, she was able to focus and maintain her attention on a mundane task longer than she had before</li><li>- Her long-term memory also seemed to improve to her, she could remember a lot more of what she was studying in her lab</li><li>- Literature all pointed out the exercise provides: better mood, better energy, better memory, better attention</li></ul> <p>How exercise transforms the brain immediately:</p> <ul style="list-style-type: none"><li>- It has an immediate effect because exercise immediately increases levels of neurotransmitters like dopamine, serotonin and noradrenaline</li><li>- The increase in these chemicals improves mood</li><li>- Exercise can increase the ability to shift and focus your attention and the improvement will last for up to two hours</li><li>- It also improves reaction times</li></ul> <p>The long-term effects of exercise:</p> <ul style="list-style-type: none"><li>- An increase in cardiorespiratory function enables long-term effects to happen</li><li>- Exercise actually changes the brain's anatomy, physiology and function," Wendy Suzuki</li><li>- Exercise enables the production of new brain cells in the hippocampus, which in turn leads to an increase in volume, which in turn improves long-term memory</li><li>- Exercise improves attention dependent on your prefrontal cortex</li><li>- Good mood neurotransmitters increase and sustain for long-term improvements</li></ul> <p>The protective effects:</p> <ul style="list-style-type: none"><li>- Exercise gives the brain protective effects</li><li>- The hippocampus and prefrontal cortex are two areas most susceptible to neurodegenerative diseases and exercise gives a form of protection to this</li></ul> <p>Length:</p> <ul style="list-style-type: none"><li>- 3 to 4 times a week of 30 minute sessions</li></ul>	<p><b>Source details:</b>5 TEDwomen, 2017, The brain-changing benefits of exercise, Available at: <a href="https://www.ted.com/talks/wendy_suzuki_the_brain_changing_benefits_of_exercise">https://www.ted.com/talks/wendy_suzuki_the_brain_changing_benefits_of_exercise</a>, Accessed 15<sup>th</sup> November 2018</p>
	<p><b>Reliability:</b>5 This source and the information contained in it are highly reliable because the author of the source is a professor of neuroscience and psychology at New York University. Also, the source is primary because she personally conducted the studies, meaning that the data can be trusted. The information is extremely current published on a credible website, all evidencing reliable material</p>
	<p><b>Validity:</b>5 This source is greatly valid to my research question because it discusses how the brain changes in anatomy, physiology and function in response to exercise and this includes memory and concentration. However, this source particularly focuses on memory and how changes in the brain's hippocampus structure and improve long-term memory.</p>
<p><b>Key findings:</b>5 The main key findings from this source was the primary information which the neuroscientist gathered from observing herself in response to exercise. After a session in the gym, she felt more focussed and able to maintain her attention on a mundane task longer than she had previously. Furthermore, her long-term memory improved because she could remember information better. Also, from this source I noted that the increase in volume of the hippocampus is due to exercise enabling the production of new brain cells in the hippocampus, increasing the volume and improving long-term memory.</p>	
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<p><b>Conclusion on source:</b>5 This source is a tremendously useful source, with trusted, reliable information and a great overview of changes that occur during and after exercise. This material will be used as foundation knowledge as I got into more detail about the changes</p>	<p><b>Development of capabilities:</b>5 The literacy capability was developed because I had to improve my note-taking skills whilst watching a video. This also developed the critical and creating thinking capability because I had to understand, evaluate and synthesise the information before taking notes.</p>



### **CAPABILITIES AND SKILLS DEVELOPED:**

I developed my personal and social skill while sourcing this article because I had to reach out to my surgeon and ask him to fill in this survey. This also meant that I had to phrase my questions formally to show that I had a basic understanding and wanted more in-depth information about my topic.

It was difficult for me to organise a face to face interview with him but that is what I wanted because then if I didn't fully understand something he said, I could ask him about it straight away rather than having to email him back.

I also developed my literacy skill because I wanted the surgeon to know that I had a deep knowledge on the subject through the way that I phrased my questions. This would also allow him to talk about the subject in-depth knowing that I would be able to understand what he was actually talking about. This meant that I had to research in-depth treatments, with the proper phraseology.

SOURCE TYPE - INTERVIEW WITH SURGEON

D4

- Very similar to the knowledge and skills section, but it is specific to the one/two capabilities you chose.
- Don't need to do for every source

## Development

- D1 Thorough and highly resourceful development of the research.
- D2 In-depth analysis of information and exploration of ideas to develop the research.
- D3 Highly effective development of knowledge and skills specific to the research question.
- D4 Thorough and informed understanding and development of one or more capabilities.



Developing the  
research  
D1, D2 and D3

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# Things You Can Do On The Last Page

**Bibliography** – a list of **all** the sources you have found so far and their reference information

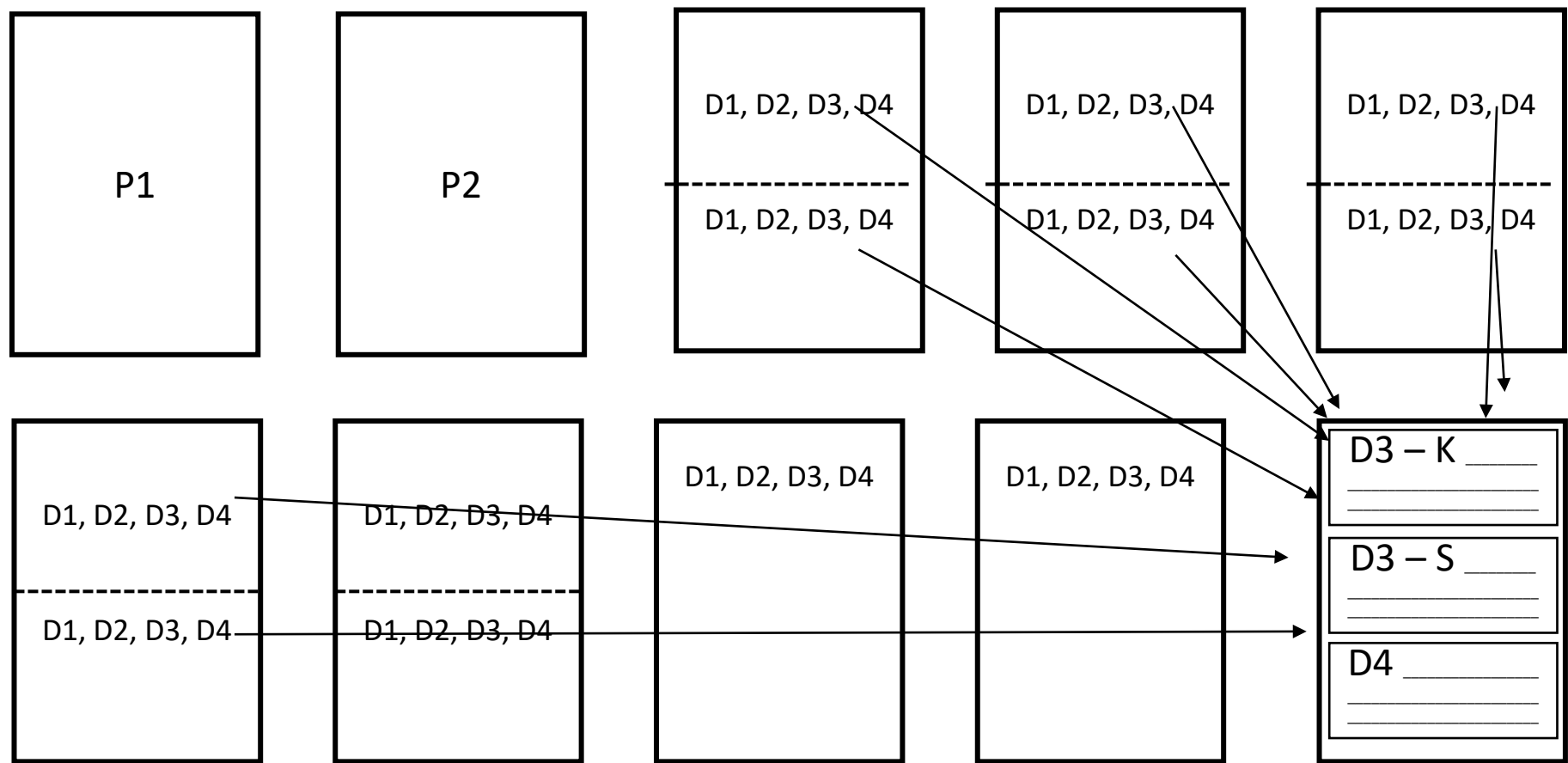
**How this helps** – this can be evidence for D1 as it shows you found many sources. However D1 is usually easy to prove from the sources you have already found so doesn't add much to your mark for the amount of room it takes up.

# Things You Can Do On The Last Page

**Summary of Knowledge and Skills** – This can be done as one paragraph, but it is better to have a paragraph on knowledge and one on skills.

**How this helps** – this allows you to summarise all the ways your knowledge and skills have progressed as you completed the folio. This will give a lot of evidence for D3.

# Things You Can Do On The Last Page



## IMPORTANT

You probably won't do knowledge and skills in every single source. Some will have a bit on knowledge development, some will have skills, some will have neither.



# Research Notes

You cannot put all the information that you find into your folio.

That means you need somewhere to keep all the notes that will become your outcome.

## Question part 1

**Source** - orem ipsum dolor sit amet, consectetur adipiscing elit.

**Source** - Nam ante turpis, rutrum ut neque quis, vulputate venenatis sapien.

## Question part 2

**Source** - orem ipsum dolor sit amet, consectetur adipiscing elit.

**Source** - Nam ante turpis, rutrum ut neque quis, vulputate venenatis sapien.

## Question part 3

**Source** - orem ipsum dolor sit amet, consectetur adipiscing elit.

# Reference List or Bibliography?

## Reference List

Lists all the sources that you **referenced**. If you didn't use it in the document it shouldn't be on the list.

## Bibliography

List of all sources that you looked at whether you refer to them or not.