

Student 1: Excellence

Intended for teacher use only

Dad's injury:

Unfortunately, Dad was involved in a serious surfing accident when he was 19 years old. He broke the C5 vertebrae in his neck and after some time in hospital he was confined to a solid neck brace for 6 months. He was extremely lucky as the break was only millimetres away from his spinal cord which would've left him tetraplegic. After a long recovery, he has been able to resume a normal life, however has been left with limited movement in his neck and shoulders due to the stiffness caused by the injury. As shown, the C5 vertebra has a significant effect on the nerves in the arms. As a result, Dad is now unable to rotate his neck sideways or reach his arms above his neck to the same degree as others.

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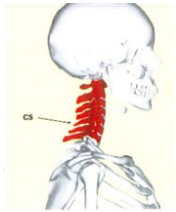
Dad's Existing Attire:

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This is the wetsuit Dad currently wears which he wears on top of a rash top and underneath a lifejacket.

- **PROS:** The material it's made from and the tight fit makes it insulated and warm against his chest. He likes this wetsuit because the short legs are much more comfortable than a full length wetsuit.
- **CONS:** The fact that it is short sleeved means it is not sun protective at all. To get the desired neck height, Dad layers it with a rash top underneath which prevents insulation from being effective in keeping his chest area warm. As there is no colour on the sleeve/shoulder area, it has poor visibility. It functions with a zip and velcro down the back which means he cannot undo it himself due to limited movement in his arms. However once it is undone, it is easy for him to take off and put on again.

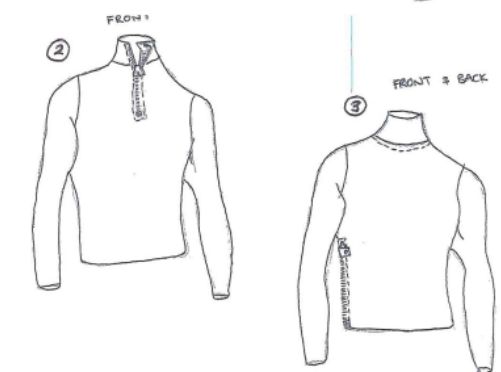
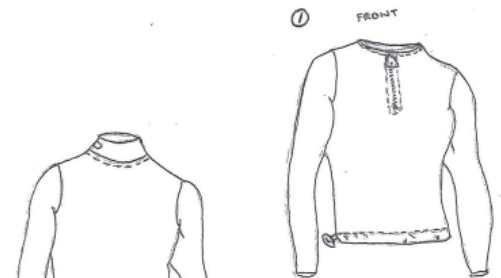


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The first type of chest zip comes from the back, over the head and then zips across the front. It looks easier and more manageable to construct than the second type of chest zip. These chest zips that come over from the back are less common and more predominant in junior and girls wetsuits.

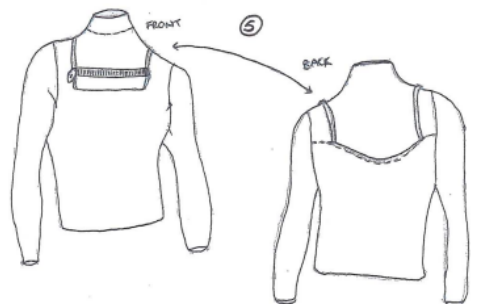


This function comes from the right side of the head, over sideways and zips across on an angle. This is the most common form of chest zip however it looks more complex to manufacture.



I also borrowed a chest zip wetsuit from my friend who is a keen surfer to have a look further into the design and see how it has been made. This particular chest zip function is the more common one used by many brands today. The headpiece comes from the right side, over the head sideways and zips across the chest. As shown in the photos, the design is very complex with layers and joins. After seeing this function in real life, I would need to make this design less complicated and more manageable if I wanted to do a form of chest zip.

Key Decisions Made	Next Steps
<p>After analysing existing watersport garment functions, I think that a zip is the best functional aspect. However, both the traditional back zip and chest zips are not good options due to accessibility.</p>	<ul style="list-style-type: none"> - I know now that sleeves will be an important factor so I will also look into existing sleeves on garments and different materials that could be used for them.
<p>After sketching possible tops with different functional features, I need to come up with a design that makes use of a zip function and placement that does not interfere with Dad's restrictions.</p>	<ul style="list-style-type: none"> - I need to research fabrics and their properties to find the best fit for my outcome. - I will also need to test these fabrics under certain conditions to see how they perform. - Seam tests will also be beneficial as the fabrics I use will be complex to sew.



Initial Ideation feedback 4

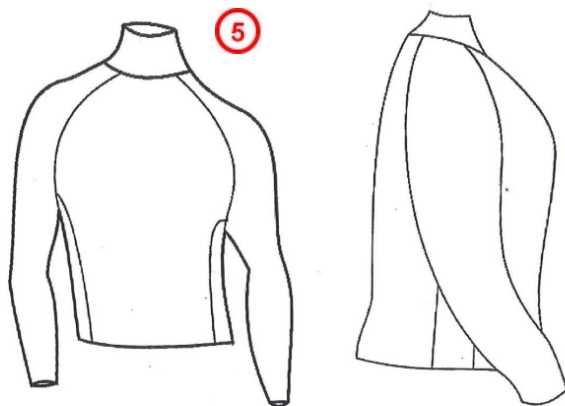
1) Having two forms of function may be unnecessary and the drawing isn't a very practical function. The neck is affected by the half zip and therefore prevents optimum sun protection.

2) Maintains sun protection with the high neck, although I think the collar could be uncomfortable with a zip up the neck. It also wouldn't be very insulated or snug fitting around the neck.

3) I like that the neck has been left without a function so it remains fitted without and discomforts and there is maximum sun protection. The zip down the side is a good place, although when seated it may roll and cause discomfort under a life-jacket.

4) I like that the zip opens a long way to allow lots of room for easy access, however as the zip is at the back Dad isn't able to use it. The way the neck can be adjusted to different tensions is a good way of allowing Dad to choose how tight he needs it. Sun protection is also still maximized with this neck.

5) This function will be too difficult for Dad to get into due to the way he will have to pull it over his head from behind. The manufacture of this is also much more complicated. The positioning of the zip is likely better than the other places.



I spent some time with the design teacher at school and together we made this drawing

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Gusset: A gusset is a triangular or rhomboidal piece of fabric that is added to a seam to add breadth or reduce stress from a tight fitting garment.

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Placket: A placket is an opening at the neck or sleeve of a garment. Majority of the time, plackets are used to make putting on or removing clothing easy. Modern plackets often have attached facings or bands to surround or reinforce fasteners (e.g buttons or zippers).



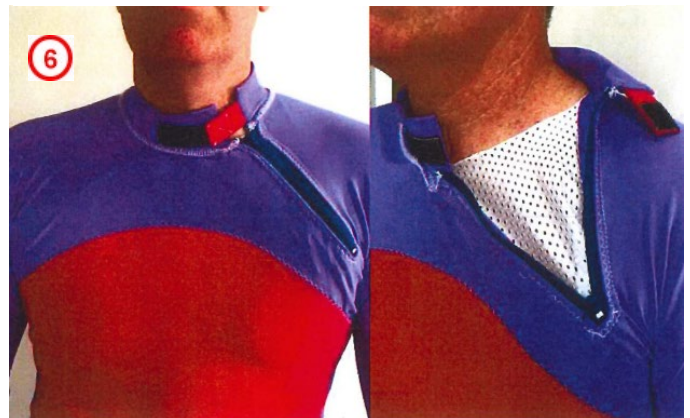
Godet: A godet is an extra piece of fabric which is sewn into the garment, causing flare by adding width and volume. A godet also gives the wearer a wider range of motion.

After speaking with XXXXX I decided to model something that included a combination of favourable functional features which include

- Frontal placement zipper, allowing easier access
- Placket/gusset, allowing an opening
- Velcro neck fastener



This gusset function with the Velcro would work perfectly as Dad can access it easily and it opens wide enough for him to pull the top over his head with ease. The Velcro tab allows him to tighten it to any desired tension which is ideal around his neck as it is the area of injury. The neck or collar height is also good for sun protection.



Final Specifications:

After researching, testing, trialling, modelling and obtaining feedback, I am able to put together my final specifications which are as follows;

I will be making a

- Fitted long sleeved lycra and merino neoprene top
- Sleeves will be made from white Nylon Lycra which is flexible and moves with the body
- Front and back panels made from merino backed neoprene for warmth/insulation
- White and blue colours for high visibility when on the water
- Long sleeves and 5cm high neck collar provides protection from the sun
- 12cm Velcro tab at collar allows custom tightening
- Mesh gusset provides wide opening at neck for easy access
- 18cm open ended heavy duty plastic zipper at side neck allows for easy accessibility
- The garment will be made using the varilock stitch (comines zig-zag and straight stitching to allow for flexibility of seams).
- 1cm seam allowances throughout garment as I sewed the seams by overlapping the two fabrics for comfort

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