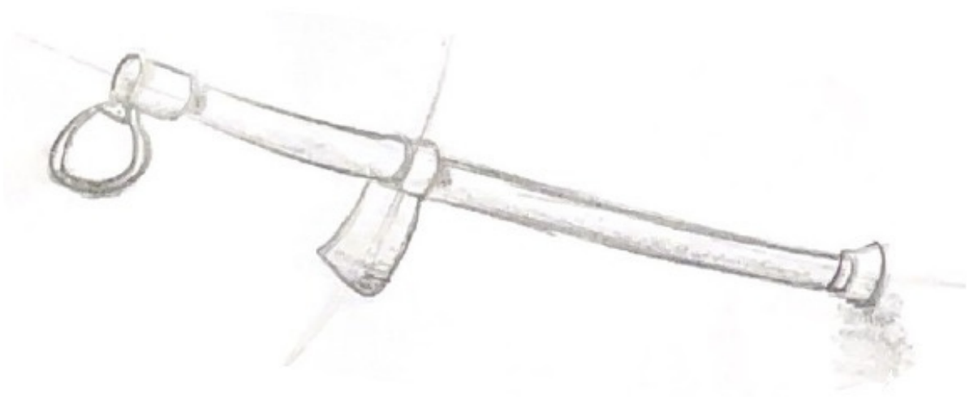
RESEARCH METHODS FOR PRODUCT DESIGN

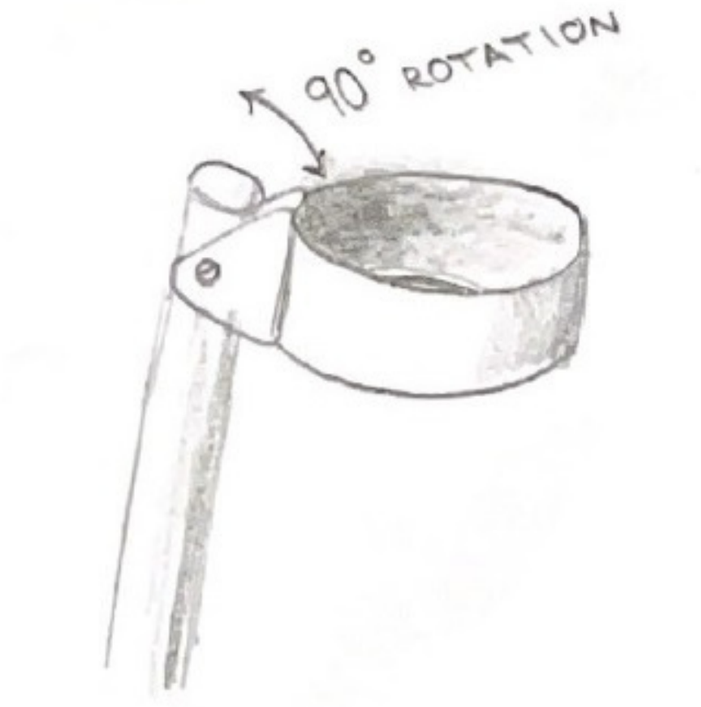
Creation of a design solution based on the CW1 research.

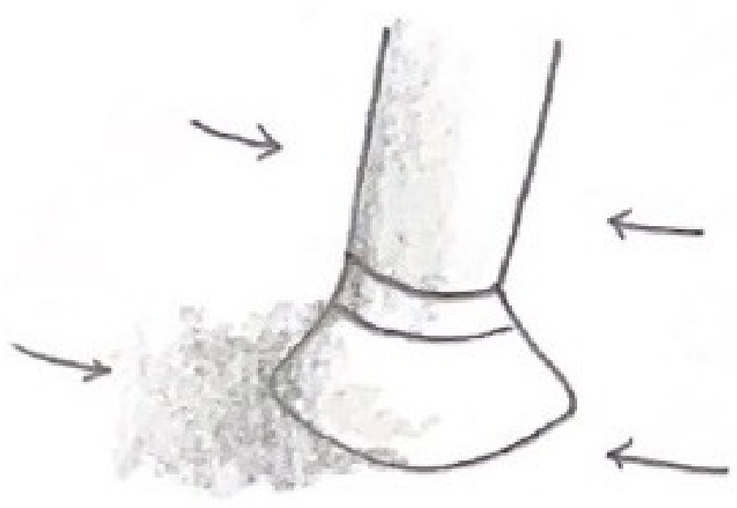
Jaime Echevarria



This sketch is the first general idea of how I wanted my crutch to be, in this case an elbow crutch because according to what I have studied in the research they are the most comfortable and reliable. Although I will also present a different concept later on.

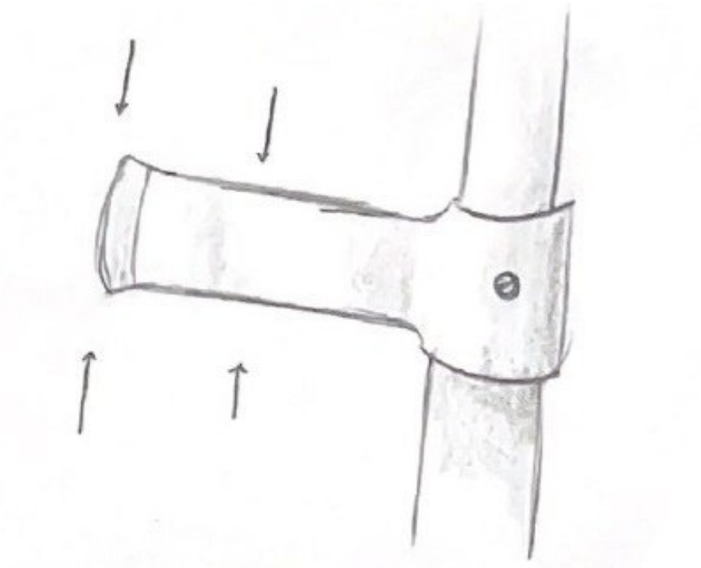
Here we can see a more detailed sketch of the support area, where the forearm would be placed. I wanted the support and hooking area to be linked by two pieces that have a kind of hinges so that the piece can rotate and not come out of the arm when you release the crutch and lift it up.





Here we can see the cap area, which is made of a rubbery plastic for better grip, preventing slips and falls. The surface that is in contact with the ground has a wider diameter than the diameter of the crutch itself, so that there is more friction with the ground.

We can distinguish the hand-grip area in more detail, where, as can be seen, there is a notable difference in diameters. This will help a lot to prevent the grip from slipping out of the consumer's hand as it slows it down. The cuff is made of the same rubbery material as the cap and the support, helping even more to prevent the hand from slipping.



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INITIAL SKETCHES

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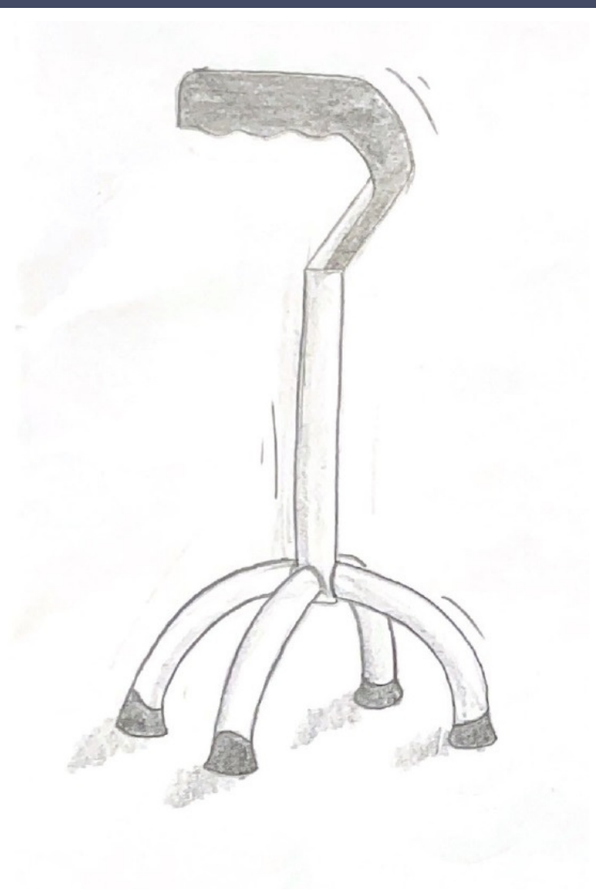
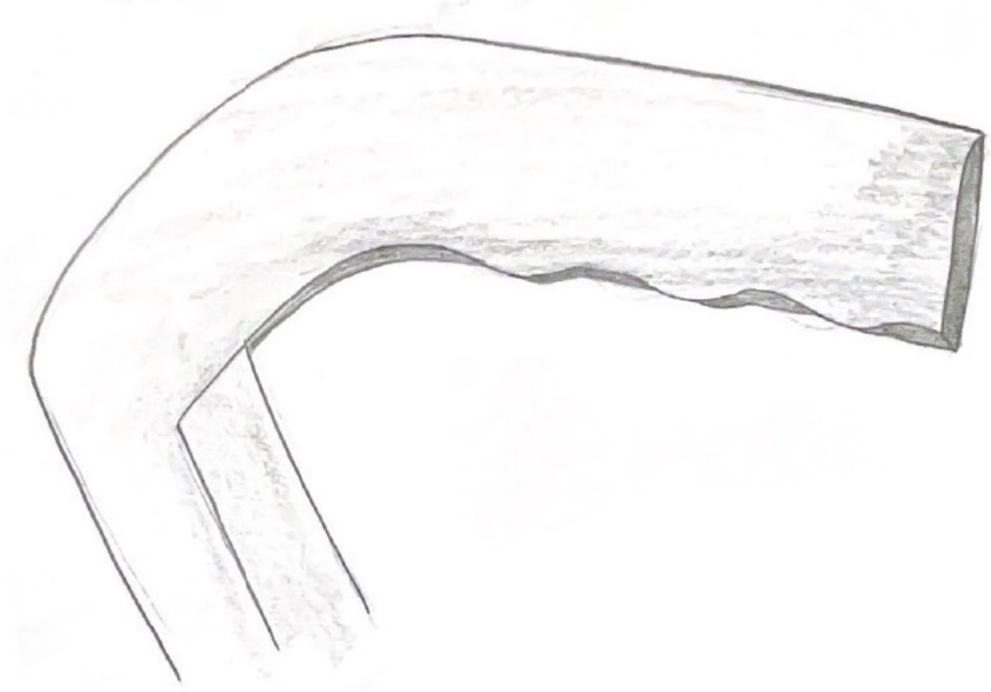


The second idea I had after the research on crutches was to create a very reliable traditional crutch that would appeal to older people and to strengthen the materials and qualities of the crutch

I have designed the handgrip with a specific shape to make it comfortable for the elderly. It has several curves at the bottom for a better grip. The grip is made of plastic but painted to look similar to wood.



This is the sketch of one of the 4 legs that the crutch will have. It is a 90'degree arc that starts at the base of the crutch and goes all the way to the ground. In the area of the cap we can find again a difference of diameters for a larger contact surface as well as a rubbery plastic that grips well to the sole to avoid slips or falls. The crutch will have four equal legs, so it is a very safe crutch if we want to prevent slipping.

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Here I have drawn the shape of a person so that you can see how the crutch would look like when used. I have to emphasize that this crutch is designed for people between 180cm and 185cm as it does not allow height adjustment.

In this sketch in which there is also a silhouette of a person, we can observe the mechanism of the crutch: in this case the person is lifting an arm (let's say he has to sign something on a high table), with a normal crutch the person would have to look for a place to leave it or support it with the risk of falling to the floor and not being able to pick it up due to some problem that the user has, be it in the back, legs, etc. With this mechanism the subject can lift his arm and do whatever he likes as the support can rotate at a 90° angle and remains attached to the arm.

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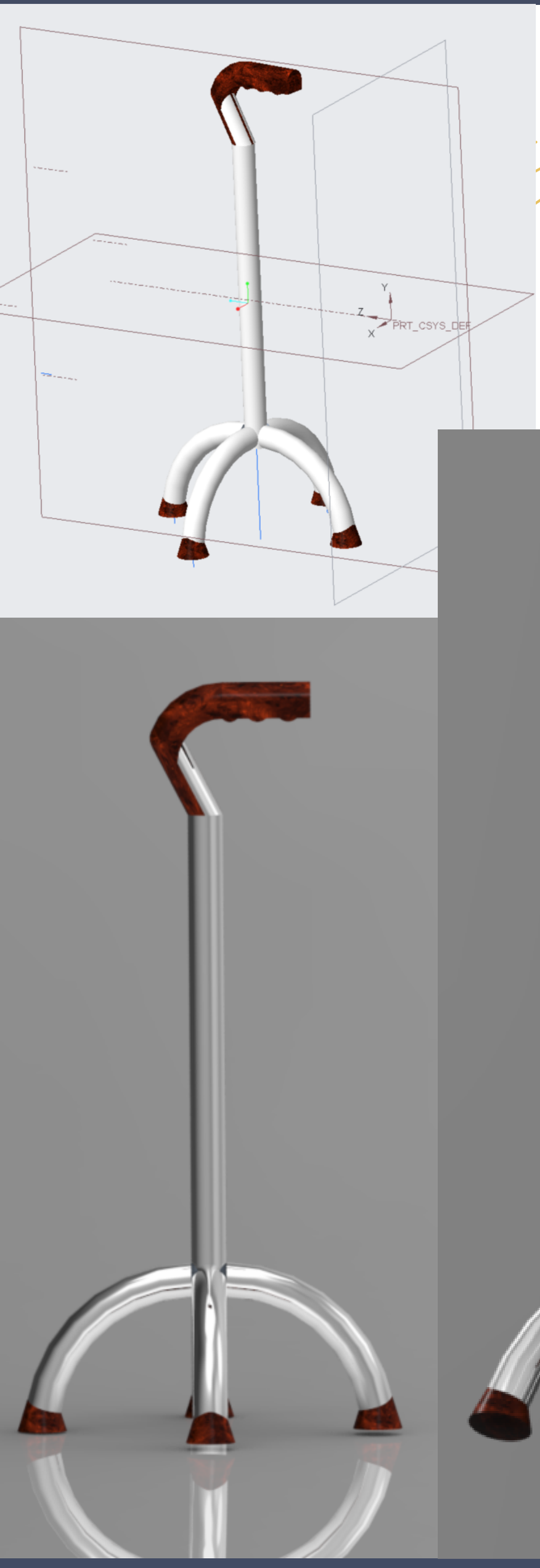

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IDEA 2
RENDERS

RESEARCH METHODS FOR PRODUCT DESIGN

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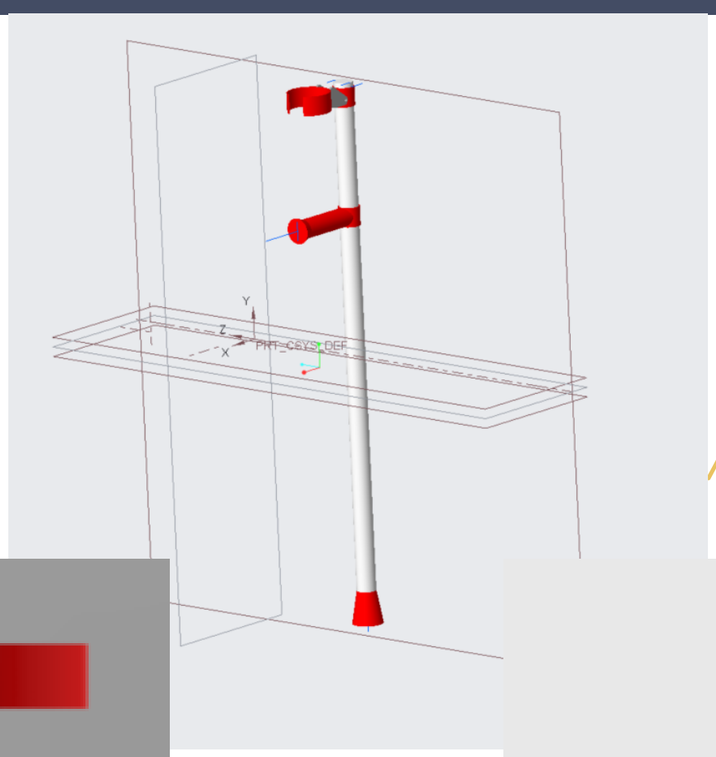

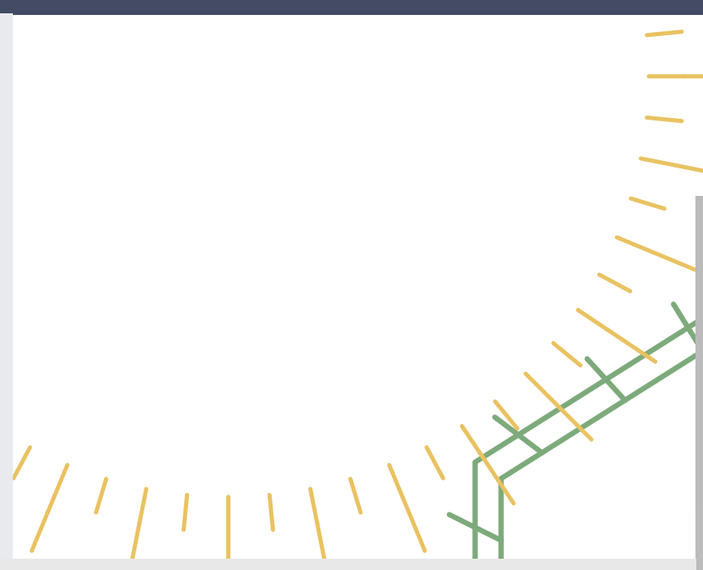

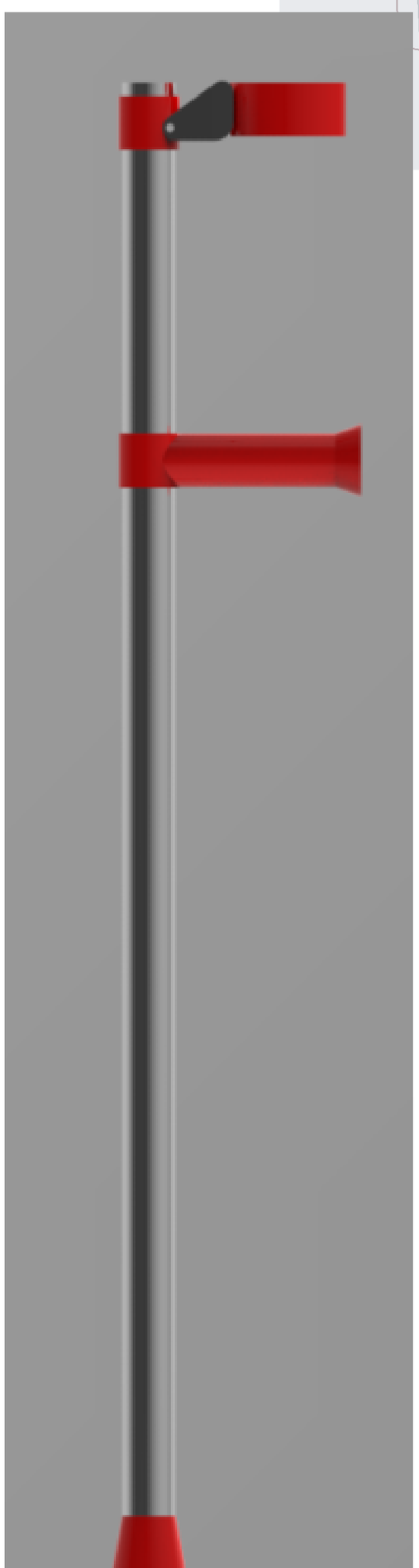

FINAL IDEA RENDERS

RESEARCH METHODS FOR PRODUCT DESIGN

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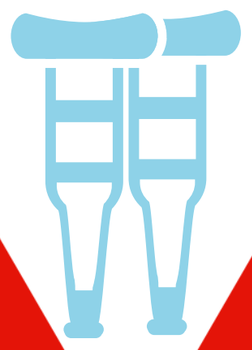
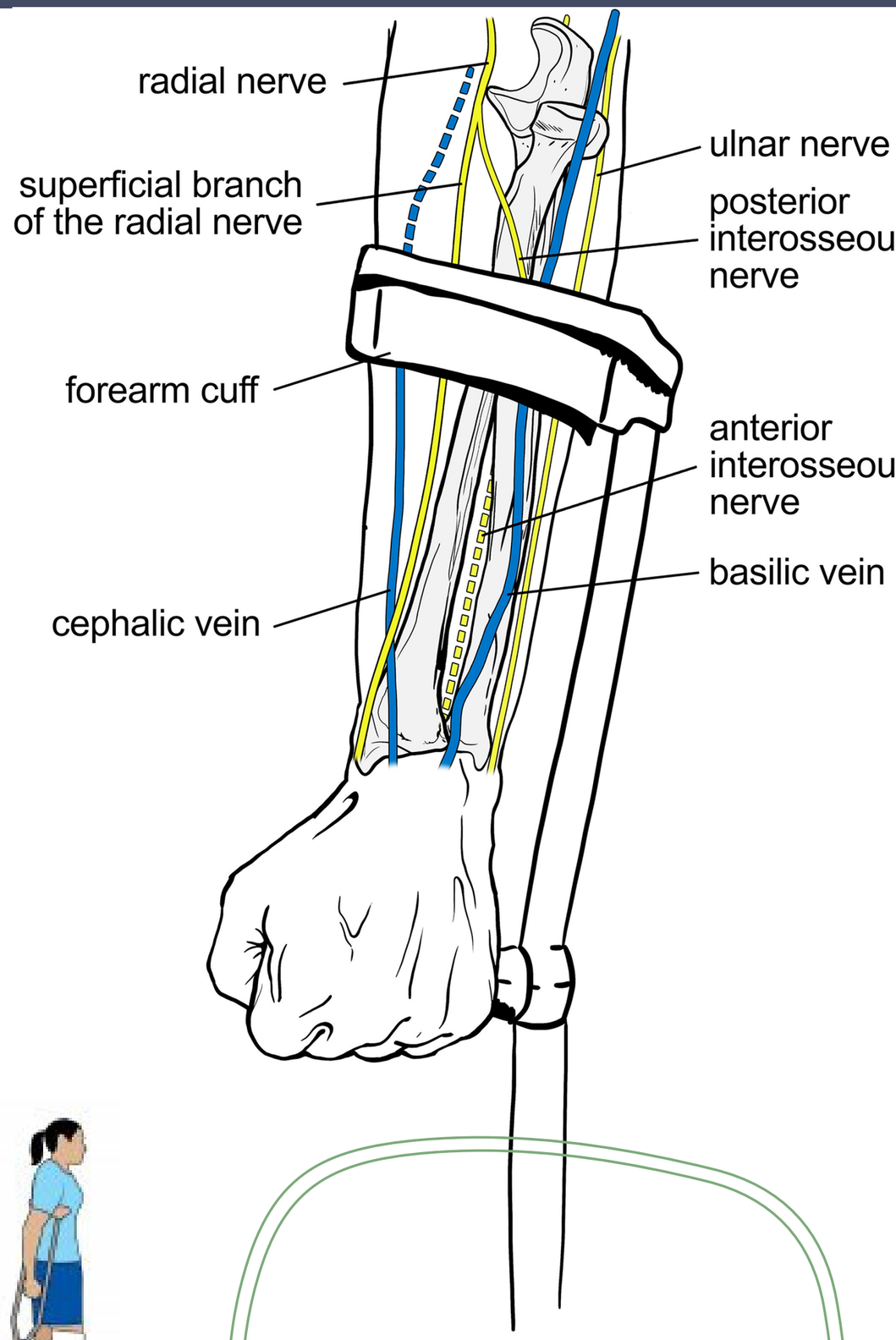
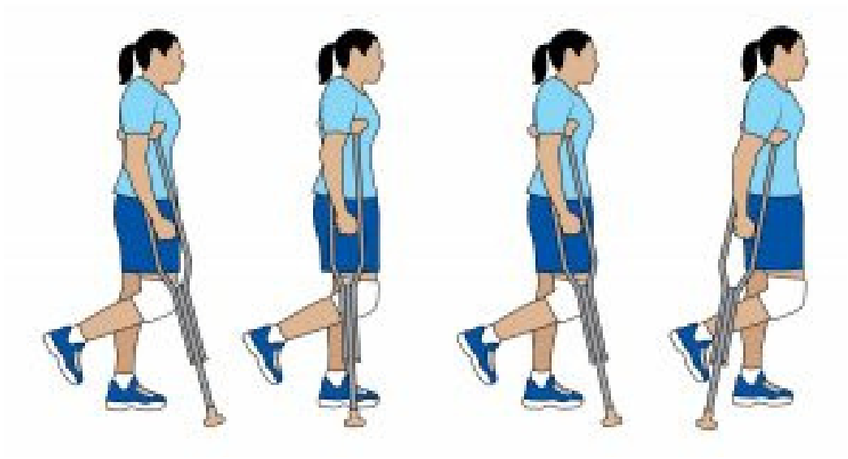
Forearm crutch-associated injuries

Stress fracture of the proximal ulna
Stress reaction of the proximal radius
Forearm venous thrombosis
Posterior interosseous
Ulnar nerves







Forearm crutch-associated injuries are attributed to pressure from the forearm cuff on these structures