Milestone 2 (Team) – Cover Page

Team Number: 6

Please list full names and MacID's of all *present* Team Members

Full Name:	MacID:
David Segal-Pillemer	segalpid
Marco Tan	tanm27
Olivia Dmitrovich	dmitrovo
Ronav Roy Chowdhury	roychr2
Safana Al-Emara	alemaras

Any student that is ***not*** present for Design Studio will not be given credit for completion of the worksheet and may be subject to a 10% deduction to their DP-2 grade.

MILESTONE 2 (STAGE 2) – DESIGN FEEDBACK

Team Number: 6

Document design revisions in the fields below for each team member's proposed concept solutions:

→ You can communicate your design revisions either by annotating directly on your team member's sketch or listing bullet-point descriptors

- If annotating directly on a sketch, save your file as a JPEG
- Insert your photo as a Picture (Insert > Picture > This Device)
- **Do not include feedback for more than one team member per page**
  - For each additional team member, copy and paste the table below

Design Feedback Entry

Your Name:	Marco Tan	**Colleague's Name:**	Everyone else
Your MacID:	tanm27	**Colleague's MacID:**	Everyone else

Design Feedback:
Olivia • Like the idea of an adjustable length to help correct the height difference David • Adjustable length with the screws is good because it will help make his legs the same length, but it does not help with the deformation of the bone Safana • Does not really address the acetabulum's deformities but addresses the length issues for the left leg of the patient Ronav • An adjustable length for the hip implant is a great idea to ensure that the load placed on one leg for the patient is less (considering that the patient's leg has a 1 cm height difference).

Design Feedback Entry

Your Name:	Olivia Dmitrovich	**Colleague's Name:**	Everyone else
Your MacID:	dmitrovo	**Colleague's MacID:**	Everyone else

Design Feedback:
Marco: • Good idea since it would be less invasive for the patient. • Some concerns about the strength of the acetabulum because of deformed shape of the back (maybe new material might be needed?) Safana: • Does not require the cutting of the acetabulum which makes it less invasive but must take into consideration how we would make a cup that aligns perfectly with the deformities. David: • Great idea because it will allow the implant to fit the patient's deformation. It will not overcompensate for the other hip. Since he is 65 and he is not in the greatest condition, a perfectly new hip may not be a good idea. However, it may be hard to replace if he needs another surgery in 10 years. Ronav: • Very effective solution as an altered hip implant tailored to the patient would be easier for them to manage. • The deformation in the acetabulum is not addressed however which might become a problem later on.

Design Feedback Entry

Your Name:	David Segal-Pillemer	**Colleague's Name:**	Everyone else
Your MacID:	segalpid	**Colleague's MacID:**	Everyone else

Design Feedback:

Olivia

- Very effective if patient requires multiple hip surgeries however, if the implant should last the rest of his life, it would be less invasive to stick to one implant rather than adding to the acetabulum and replacing the hip.

Marco:

- Very effective and less invasive than a regular hip implant, but worries about the material as it would have to be stronger than regular bone cement.
    - Regular bone cement helps to fit metal components to bone (it's an adhesive), but here it would become a structural component.

Ronav:

- Very efficient solution in ensuring that the hip implant can be replaced easily but there might be concerns regarding the structural stability of the bone cement/acetabulum deformations.

Safana:

- Great for making the procedure less invasive, however we don't know if that would be a drastic change for the patient that their muscles won't be used to.

Design Feedback Entry

Your Name:	Safana	**Colleague's Name:**	Everyone else
Your MacID:	alemaras	**Colleague's MacID:**	Everyone else

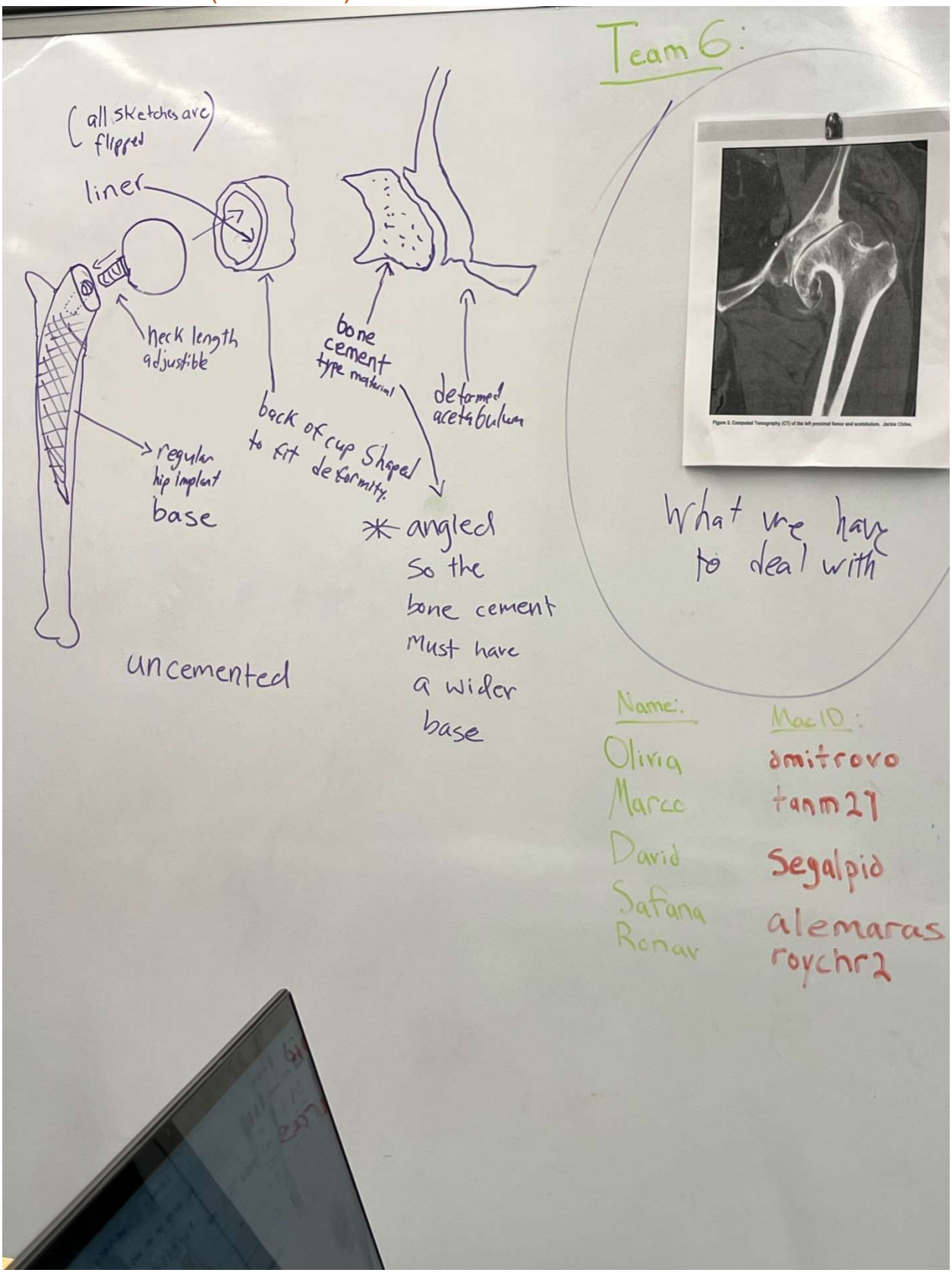
Design Feedback:
Olivia • The springs are a creative idea for cartilage; however, we should take into consideration the movement and how the leg would be impacted Marco: • Springs sound like a good idea for cushioning but I have worries about springs wearing down too quickly. Ronav: • Springs are good idea to mimic cartilage and to ensure the patient can move more naturally. David: • Good idea to make the cartilage with micro-springs inside to allow for more flexibility in the cartilage, but finding a bio-compatible material for this may be difficult

Design Feedback Entry

Your Name:	Ronav Roy Chowdhury	**Colleague's Name:**	Everyone else
Your MacID:	roychr2	**Colleague's MacID:**	Everyone else

Design Feedback:
Olivia • Like the combination of fixing both the acetabulum and the implant cup shape. Marco: • Like that it's a combination of both David and Olivia's ideas. • Have the same concerns as both of theirs (the material and strength of both the acetabular implant/bone cement since it's more load bearing now). Safana: • Great in combing the groups ideas but unsure what materials would be best in the additions for the bone and what would be the drawbacks of including bone cement. David: • Great idea with the combination, as it will allow for the best of all the designs, but we should keep in mind not over compensating since he is already 65 and not in the best condition.

MILESTONE 2 (STAGE 3) – REFINED CONCEPT SKETCH



Team Number: 6

MILESTONE 2 (STAGE 4) – GROUP DISCUSSION

Team Number: 6

Discuss the advantages and disadvantages of your refined concept solution

Advantages:

- Not too invasive altering only the femur head and cutting that off, not replace acetabulum
- Doesn't overcompensate for the right hip
- The muscles will not have to adapt to a completely different hip structure

Disadvantages:

- Difficult to have another replacement after this one
- Many points of weakness as a result of having many components combined
- Costs will probably be higher than a regular hip replacement since some components are patient specific.

Discuss the extent to which your refined concept solution addresses the need statement

Our refined concept solution will ensure that less load is placed on Jackie's one leg which will mitigate the amount of pain he feels from day to day. Since there is strong putty molded to fit the deformed acetabulum coupled with an altered cup, the fit will be less invasive and thus result in less pain for Jackie.