

INNOVATIONS IN THE DESIGN OF TWO SIMPLE PRODUCTS

Joaquim Lloveras. Universitat Politècnica de Catalunya (UPC), Barcelona

Through the office of innovation and technology transfer of the UPC, an order for a job came from a young company. It consisted in a design of therapeutic balls for women.

These balls can be used to do voluntary exercises of the pelvic muscles, i.e. Kegel exercises, or to exercise these muscles involuntarily by means of automatic contraction when receiving the impact of a weight inside the ball on its walls while walking. The company wanted an innovative therapeutic ball design.

After some time to digest this unusual commission, it was accepted as a stimulating challenge and a University-Company agreement was signed. The design team was quite small and had a reduced budget.

I) THERAPEUTIC BALL <https://www.youtube.com/watch?v=M32LCw67pe0>

1. Directed design

It was decided to try a design of two identical halves that, when put together, would form a ball that could be closed with a twist. The ball was unique and inside it contained a weight of small interchangeable balls.

2. Defined design and first functional prototypes

More information and data were sought. With the help of ergonomic data, the range of angles and displacement was calculated, and therefore the displacement of the internal weights.

Users would be able to change the weight (small ball) inside the ball to adapt it to their own needs.



3. Validated Design and final prototyping

The proper functionality of the final 3D model, validated the design. A small number of pieces with the appropriate materials was made by injection and subsequently analyzed and tested.

4. Product innovations

- To save materials, the product includes a single external ball and four interchangeable internal balls.
- The ball can be disassembled into two identical parts, so a single mold to make hemispheres is enough to assemble balls. This facilitates manufacturing and lowers the cost of the mold.
- A tape placed in the corresponding groove of the ball has a large conical tip-shaped end.

II) MENSTRUAL CUP <https://www.youtube.com/watch?v=FC1o-liNd8w>

A similar design process was done to design a menstrual cup for this company.

Product innovations

- Small notches on the inside edge of the cup facilitate folding for insertion.
- Drainage tube with differentiated flexible parts that acts as a valve and always folds in the same area.
- When the drainage tube is folded, its end rest on the vaginal wall (a simple and reliable solution).
- An alternative design was a minimalist flat cup (shown on the right of figure).



III) NOTES

Patents were filed for both Ball and Cup designs. These products are currently sold in several countries.

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