

PDS

Male Barrier Strength Demonstration

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Function: To demonstrate to classrooms with students of various ages the strength of latex and polyurethane male barriers. This will be accomplished by inserting lead pellets or a different dense material into the barrier and displaying the resulting weight it can hold.

Client requirements:

- portable
- classroom and user friendly
- inexpensive
- reproducible

Design requirements:

1. Physical and Operational Characteristics

a. Performance requirements:

- Able to withstand repeated demonstrations (approx. weight ~10 lbs.)
- Must clearly and accurately display weight
- Stable structure
- Able to secure latex and polyurethane in place

b. Safety:

- Must prevent pellets from scattering upon barrier failure
- Must prevent latex/polyurethane from scattering
- Barrier clamp must not be dangerous

c. Accuracy and Reliability:

- Should provide repeatable results
- Accuracy to the nearest .1 lb would be desirable

d. Life in Service:

- Must withstand repeated use

- Average number of demonstrations during which the tool will be used in its lifetime has yet to be determined
- Should be designed to last a number of years before becoming dysfunctional

e. *Shelf Life:*

- Some components may require a dry space for storage
- Scale may require the tool to be used and stored at room temperature away from heaters or air conditioners.
- Scale may require batteries of standard shelf life

f. *Operating Environment:*

- Classroom environment will prevent the device from operating under adverse conditions
- Students may handle device, should be durable
- Must be tolerant of dust if stored

g. *Ergonomics:*

- Height and shape must allow for easy placement of lead pellets into the barrier.

h. *Size:*

- Height will possibly exceed a few feet when in use
- Floor space will be minimal
- Will likely be able to be disassembled
- Must remain small enough to be portable

i. *Weight:*

- Light and easily portable
- No quantitative data is yet available
- Must be able to withstand 10+ pounds of strain easily

j. *Materials:*

- Must be able to be handled by students (nothing fragile or harmful in any way)

k. *Aesthetics, Appearance, and Finish:*

- Sleek and professional appearance
- Should focus attention to condom and weight reading
- Must have a clear casing, if any, to ensure condom visibility

2. Production Characteristics

a. *Quantity:*

- One unit is currently required with possible future reproducibility being a primary design concern

b. *Target Product Cost:*

- Should be relatively inexpensive
- Around \$100 total

3. Miscellaneous

a. *Standards and Specifications:*

- none

b. *Customer:*

- Small
- Inexpensive
- Liked the idea of lead pellet use

c. *Patient-related concerns:*

- Device needs to include additional male barriers/storage area for additional demonstrations
- After barrier breaks, students should be shielded from possible scattered pellets
- Large enough display to read from a reasonable distance

d. *Competition:*

- There are commercial products that test the strength and effectiveness of male barriers, but we are not aware of any devices specifically for classroom use.