

Worksheet 1: Comfort Assessment

Participant Information:

- Name: E
- Shovel Type (A, B, C, D, E, F, G, H, I, J, K, L, M, N): 1st
- Forks Type (A, B, C, D, E, F, G, H, I, J, K, L): 2nd
- Task Description (e.g., lifting straw into a wheelbarrow):

Comfort Evaluation:

1. On a scale from 1 to 10, rate the overall comfort of using the shovel (1 being extremely uncomfortable, 10 being extremely comfortable).

Rating: 8 shovel 6 fork

2. Were there any specific discomfort points while using the shovel or forks? Please describe.

Shovel - Weight was heavy
Fork - too short

3. Did you experience any discomfort in your hands, wrists, arms, or body? If yes, please specify.

I wanted to turn my hands for a different grip when lifting shovel. Fork created more discomfort when dumping for my wrists

4. Were there any features of the shovel that contributed to or alleviated discomfort? (e.g., grip design, curvature)

Shovel scoop was angled for easier scooping

5. How would you suggest improving the comfort of this shovel for your body type or specific my way task?

Both - Add a handle for lower hand placement.

Worksheet 2: Control Assessment

Control Evaluation:

1. On a scale from 1 to 10, rate your perceived level of control while using the shovel or fork (1 being very little control, 10 being complete control).

Rating: 7 Shovel 8 fork

2. Did you feel that the shovel allowed you to maintain control over the load (e.g., manure and straw mixture)? Please explain.

A heavier load would be less control because of the larger size of the shovel scoop

3. Were there any instances where you felt the shovel's design hindered your control over the task?

Because I wanted to turn my hands when dumping the scoop, I had less control.

- Were there specific design features of the shovel that positively or negatively impacted your control (e.g., grip shape, length)?
large SCOOP - more weight making me adjust my grip more often.
- How would you recommend enhancing control when using this shovel for your body type or specific task? Making my scoop size smaller, learning how to grip properly.

Worksheet 3: Perceived Exertion Assessment

Perceived Exertion Evaluation:

- On a scale from 1 to 10, rate your perceived level of physical exertion while using the shovel or forks (1 being very little exertion, 10 being extremely exerting).
 - Rating: 7 - Shovel 7 - fork
- Were there specific moments during the task when you felt exertion was higher or lower? Please describe these moments.
Shovel - exertion was higher ~~the~~ when dumping
Fork - exertion higher when ~~at~~ bending over
- Did the shovel design affect your perceived exertion levels (positively or negatively)?
Scoop Design exertion was positive, lower exertion but weight when dumping was negative, higher exertion
- Were there any physical areas (e.g., back, arms, wrists) where you felt increased exertion or strain? Please specify.
Fork - back strain because I had to bend over more.
- How do you think the design of the shovel or forks could be modified to reduce perceived exertion for your body type or specific task?
Balance weight, size, height of both tools for my stature

Ensure that participants complete these worksheets after using each shovel or fork type for the designated tasks. This feedback will be valuable for the research in evaluating the ergonomic efficiency of the shovels and making recommendations for improvements.