

Worksheet 1: Comfort Assessment

Participant Information:

- Name: B
- Shovel Type (A, B, C, D, E, F, G, H, I, J, K, L, M, N): F (favorite)
- Forks Type (A, B, C, D, E, F, G, H, I, J, K, L): E (favorite)
- 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
2. Were there any specific discomfort points while using the shovel or forks? Please describe.
Height of shovel/fork affected my ability to lift and dump the hay
3. Did you experience any discomfort in your hands, wrists, arms, or body? If yes, please specify.
Felt my shoulders elevate for tools with a long shaft. This caused discomfort
4. Were there any features of the shovel that contributed to or alleviated discomfort? (e.g., grip design, curvature)
Lightweight tools were easier to maneuver
5. How would you suggest improving the comfort of this shovel for your body type or specific task?
 - Different sized shafts
 - Different circumference of shaft for gripping

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
2. Did you feel that the shovel allowed you to maintain control over the load (e.g., manure and straw mixture)? Please explain.
Yes. Lightweight tool increased control
3. Were there any instances where you felt the shovel's design hindered your control over the task?
Height and weight of shovel hindered control

4. Were there specific design features of the shovel that positively or negatively impacted your control (e.g., grip shape, length)?
weight of tool

5. How would you recommend enhancing control when using this shovel for your body type or specific task?
- staggering feet for increased balance
- one hand palm down and one hand palm up when gripping tool

Worksheet 3: Perceived Exertion Assessment

Perceived Exertion Evaluation:

1. 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: 6

2. Were there specific moments during the task when you felt exertion was higher or lower? Please describe these moments.

more exertion for heavier tools

3. Did the shovel design affect your perceived exertion levels (positively or negatively)?

Lightweight = positive

Heavy = negative

4. Were there any physical areas (e.g., back, arms, wrists) where you felt increased exertion or strain? Please specify.

~~the~~ shoulder and wrist

5. 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?

weight and height of tool

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.