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Perceived Exertion (RPE), Comfort, and Control Assessment

As you become more familiar with your body's reactions during exercise, you'll learn to recognize when it's time to change how hard you work. For instance, consider a walker aiming for **moderate-intensity exercise**. Their target would be to hit a **"somewhat hard"** level, corresponding to **12-14 on the Borg Scale**. Should they find their effort registering as **"very light"** (a 9 on the Borg Scale), this is an indicator to ramp up your pace. Conversely, if the walker experiences his or her effort as **"extremely hard"** (ranking at 19 on the Borg Scale), it's a sign to reduce the intensity, slowing down to stay within the moderate-intensity zone.

Rating of Perceived Exertion

- 6 - No exertion, sitting and resting
- 7 - Very, very light
- 8 - Very, very light
- 9 - Very light
- 10 - Very light
- 11 - Fairly light
- 12 - Somewhat hard
- 13 - Somewhat hard
- 14 - Somewhat hard
- 15 - Hard
- 16 - Very hard
- 17 - Very hard
- 18 - Very, very hard
- 19 - Extremely hard
- 20 - Maximum exertion (Borg, 1998)

1. Scoop Shovel

Worksheet 1: Comfort and Cardiovascular Effort Assessment for Shovel **without** Auxiliary Attachment Use

Participant Information:

Participant ID:

Shovel Types (A, B, C, D, E, F, G, H, I, J, K, L, M, N.....):

Task Description: Scoop up wood pellets and transfer them to a wheelbarrow.

Comfort Evaluation for Scoop Shovel:

1. On a scale from 1 to 5, rate the overall comfort of using the shovel (1 being extremely comfortable, 2 comfortable, 3 moderately comfortable, 4 uncomfortable, 5 being extremely uncomfortable).

(Rating Shovel 1 2 Shovel 2 4 Shovel 3 3).

favorite



- Describe any specific discomfort points while using shovels. (e.g. hands, wrists, arms, or body) Please describe.

Shovel 1 none
 Shovel 2 back + arms angle of scoop made me lift more
 Shovel 3 back + arms a little

- Identify features of the shovel that contributed to or alleviated discomfort. (e.g., grip design, curvature)

Shovel 1 the longer handle made it more comfortable
 Shovel 2 short handle + angle of scoop made it uncomfortable
 Shovel 3 short handle made it uncomfortable

- Suggest improvements for the shovel's comfort.

Shovel 1 angle of scoop, more of an angle on scoop
 Shovel 2 longer handle + less harsh of an angle on scoop
 Shovel 3 longer handle

Worksheet 2: Control and Perceived Exertion Assessment for Shovel without Auxiliary Attachment Use

Control Evaluation:

- On a scale from 1 to 5, rate your perceived level of control while using the shovel (**1 being extremely in control, 2 in control, 3 moderately in control, 4 slightly in control, 5 Not in control at all**).

(Rating Shovel 1 1 Shovel 2 3 Shovel 3 2).

- Discuss the shovel's ability to maintain control over the load.

Shovel 1 easy to control
 Shovel 2 harder to control than 1
 Shovel 3 easy to control

- Identify any design aspects of the shovel that hindered control.

Shovel 1 _____
 Shovel 2 length of handle
 Shovel 3 angle of scoop + length of handle

- Recommend enhancements for better control.



Shovel 1 _____
Shovel 2 longer handle
Shovel 3 longer handle

Cardiovascular Effort Evaluation *without* Auxiliary Attachment:

5. Estimate your heart rate during the task and compare it to your target heart rate zone.

Using the Borg RPE scale (6-20), rate your perceived exertion.

(Rating Rating Shovel 1 120 Shovel 2 150 Shovel 3 140).

Comfort Evaluation for Scoop Shovel with auxiliary attachment:

- 1 On a scale from 1 to 5, rate the overall comfort of using the shovel (1 being extremely comfortable, 2 comfortable, 3 moderately comfortable, 4 uncomfortable, 5 being extremely uncomfortable).

(Rating Shovel 1 4 Shovel 2 2 Shovel 3 4).

favorite

- 2 Describe any specific discomfort points while using shovels. (e.g. hands, wrists, arms, or body) Please describe.

Shovel 1 my left arm got tired from lifting w/ the handle
 Shovel 2 slight discomfort in left arm
 Shovel 3 discomfort in left arm & abdominal muscles

- 3 Identify features of the shovel that contributed to or alleviated discomfort. (e.g., grip design, curvature)

Shovel 1 w/ handle it was hard to dump & it felt like it put
 Shovel 2 extra handle alleviated back & some of arm pain
 Shovel 3 handle type & angle of scoop

more stress on my arm

- 4 Suggest improvements for the shovel's comfort.

Shovel 1 change in handle
 Shovel 2 none
 Shovel 3 change in handle

Worksheet 2: Control and Perceived Exertion Assessment for Shovel with auxiliary attachment Use

Control Evaluation:

- 5 On a scale from 1 to 5, rate your perceived level of control while using the shovel (1 being extremely in control, 2 in control, 3 moderately in control, 4 slightly in control, 5 Not in control at all).

(Rating Shovel 1 4 Shovel 2 2 Shovel 3 3).

- 6 Discuss the shovel's ability to maintain control over the load.

Shovel 1 hard to control when dumping



- Shovel 2 easy to control
- Shovel 3 hard to control when scooping
- 7 Identify any design aspects of the shovel that hindered control.
- Shovel 1 the handle made it hard to dump
- Shovel 2 none
- Shovel 3 none
- 8 Recommend enhancements for better control.
- Shovel 1 change in auxillary handle
- Shovel 2 no change
- Shovel 3 change in angle of scoop

Cardiovascular Effort Evaluation with auxiliary attachment:

5. Estimate your heart rate during the task and compare it to your target heart rate zone.

Using the Borg RPE scale (6-20), rate your perceived exertion.

(Rating Rating Shovel 1 130 Shovel 2 120 Shovel 3 130).



2. Pitchfork

Worksheet 1: Comfort and Cardiovascular Effort Assessment for Pitchfork **without** Auxiliary Attachment Use

Pitchfork Type (A, B, C, D, E, F, G, H, I, J, K, L, M.....):

Task Description: Removing straw mixed with dung and transferring them to a wheelbarrow.

Comfort Evaluation for Pitchfork:

- 1 On a scale from 1 to 5, rate the overall comfort of using the pitchfork (1 being extremely comfortable, 2 comfortable, 3 moderately comfortable, 4 uncomfortable, 5 being extremely uncomfortable).

(Rating Pitchfork 1 1 Pitchfork 2 4 Pitchfork 3 1).

favorite

- 2 Describe any specific discomfort points while using shovels. (e.g. hands, wrists, arms, or body) Please describe.

Pitchfork 1 none

Pitchfork 2 arms + abdominal muscles

Pitchfork 3 none

- 3 Identify features of the shovel that contributed to or alleviated discomfort. (e.g., grip design, curvature)

Pitchfork 1 curvature + length of handle alleviated discomfort

Pitchfork 2 angle + type of scoop caused discomfort

Pitchfork 3 handle + angle alleviated discomfort

- 4 Suggest improvements for the shovel's comfort.

Pitchfork 1 none

Pitchfork 2 angle of fork, width of prongs → too small to

Pitchfork 3 none

scoop hay would be good for poop



Worksheet 2: Control and Perceived Exertion Assessment for Pitchfork without Auxiliary Attachment Use

Control Evaluation:

- 1 On a scale from 1 to 5, rate your perceived level of control while using the (1 being extremely in control, 2 in control, 3 moderately in control, 4 slightly in control, 5 Not in control at all).

(Rating Pitchfork 1 1 Pitchfork 2 3 Pitchfork 3 1).
favorite

- 2 Discuss the shovel's ability to maintain control over the load.

Pitchfork 1 easy to control
 Pitchfork 2 harder to control bc of angle
 Pitchfork 3 easy to control

- 3 Identify any design aspects of the shovel that hindered control.

Pitchfork 1 none
 Pitchfork 2 angle of scoop
 Pitchfork 3 none

- 4 Recommend enhancements for better control.

Pitchfork 1 none
 Pitchfork 2 angle of scoop, make it more angled
 Pitchfork 3 none

Cardiovascular Effort Evaluation without Auxiliary Attachment:

- 5. Estimate your heart rate during the task and compare it to your target heart rate zone.

Using the **Borg RPE scale (6-20)**, rate your perceived exertion for pitchforks.

(Rating Pitchfork 1 90 Pitchfork 2 120 Pitchfork 3 80).

Worksheet 1: Comfort and Cardiovascular Effort Assessment for Pitchfork with auxiliary attachment Use

Comfort Evaluation for Pitchfork with auxiliary attachment:

- 1 On a scale from 1 to 5, rate the overall comfort of using the pitchfork (1 being extremely comfortable, 2 comfortable, 3 moderately comfortable, 4 uncomfortable, 5 being extremely uncomfortable).

1. (Rating Pitchfork 1 4 Pitchfork 2 3 Pitchfork 3 2).

favorite

- 3 Describe any specific discomfort points while using shovels. (e.g. hands, wrists, arms, or body) Please describe.

Pitchfork 1 my left arm became tired

Pitchfork 2 arms

Pitchfork 3 my left arm

- 4 Identify features of the shovel that contributed to or alleviated discomfort. (e.g., grip design, curvature)

Pitchfork 1 the handle made my left arm feel like it was

Pitchfork 2 the handle helped

Pitchfork 3 having two handles helped, one for my left put stress on my arm *lifting much more*

- 5 Suggest improvements for the shovel's comfort.

Pitchfork 1 no extra handle

Pitchfork 2 angle of fork

Pitchfork 3 change in extra handle

Worksheet 2: Control and Perceived Exertion Assessment for Pitchfork with auxiliary attachment Use

Control Evaluation:

1 On a scale from 1 to 5, rate your perceived level of control while using the (1 being extremely in control, 2 in control, 3 moderately in control, 4 slightly in control, 5 Not in control at all).

2 (Rating Pitchfork 1 4 Pitchfork 2 3 Pitchfork 3 1).

3 Discuss the shovel's ability to maintain control over the load.

Pitchfork 1 hard to dump load

Pitchfork 2 a little hard to dump, but handle helped scoop

Pitchfork 3 easy to control

4 Identify any design aspects of the shovel that hindered control.

Pitchfork 1 extra handle

Pitchfork 2 handle when dumping

Pitchfork 3 none

5 Recommend enhancements for better control.

Pitchfork 1 no or shorter handle

Pitchfork 2 design/grip of handle

Pitchfork 3 none

Cardiovascular Effort Evaluation with Auxiliary Attachment:

6. Estimate your heart rate during the task and compare it to your target heart rate zone.

Using the Borg RPE scale (6-20), rate your perceived exertion for pitchforks.

(Rating Pitchfork 1 130 Pitchfork 2 ~~120~~ Pitchfork 3 150).

110