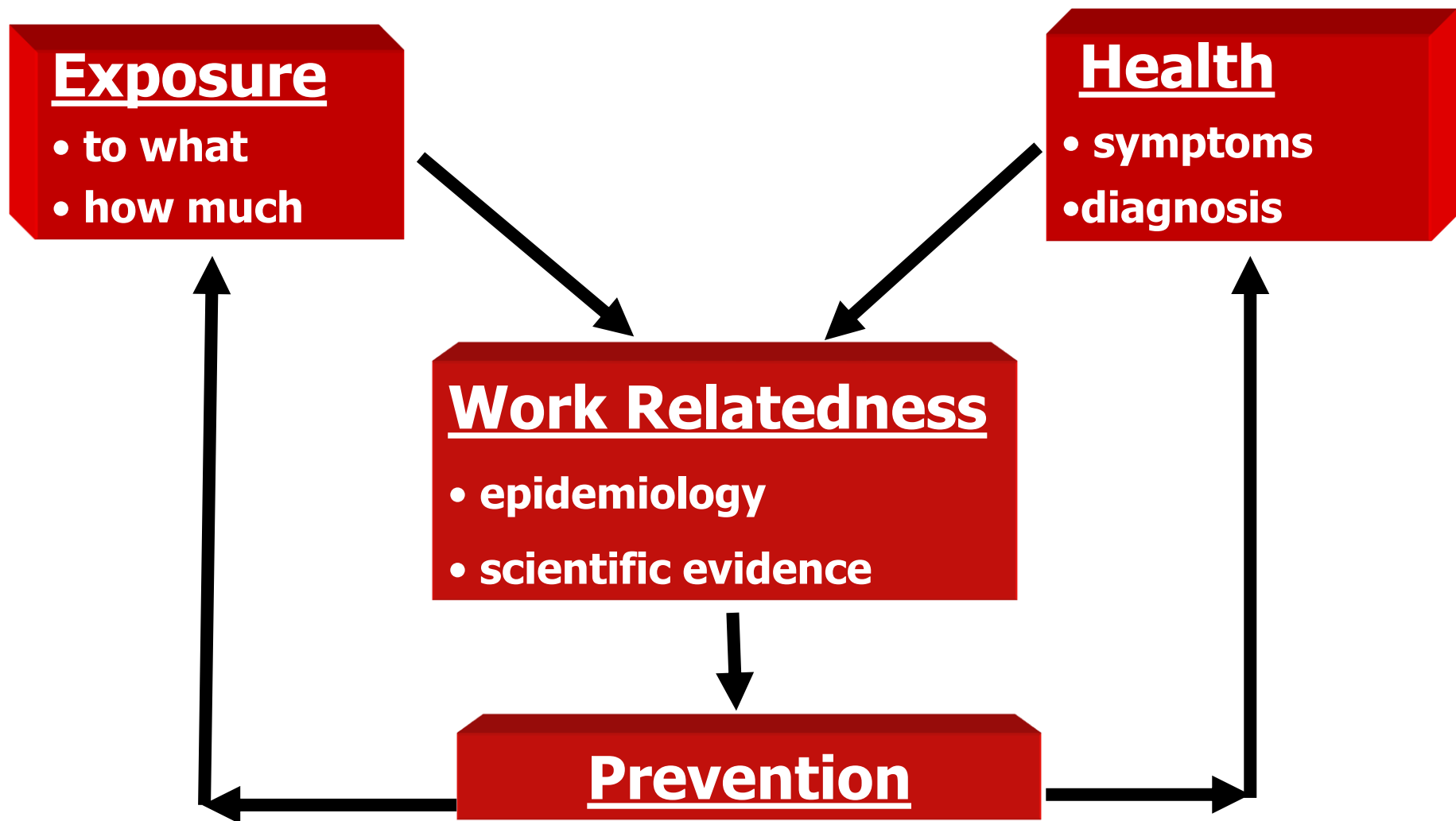


EU-OSHA e-tools webinar
September 28th, 2021

PainPoint App – Prevent Musculoskeletal Disorders (MSD) at Work

Daryl Stephenson, PhD
Ergonomist, AE
Occupational Health Clinics for Ontario Workers
Ontario, Canada

What OHCOW Does



PainPoint App Creation

Released in October of 2015

Collaboration between Occupational Health Clinics for Ontario Workers (OHCOW) and the Canadian Centre for Occupational Health and Safety (CCOHS).



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Health Clinics
for Ontario
Workers Inc.

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Occupational
Health Clinics
for Ontario Workers



Centre de Santé
des Travailleurs(ses)
de l'Ontario

Initial Goals for PainPoint App

- For individuals to use
- Desire to raise awareness about work-related pain and take action to prevent it
- Recommend steps a user can take to reduce their workplace exposures

PainPoint App Use

- Delivers very basic ergonomic assessment
- Results depicted on a body map
- Gives recommendations to address work-related MSD hazards
- Summary of results can be shared

A good first step for recognition, action and prevention

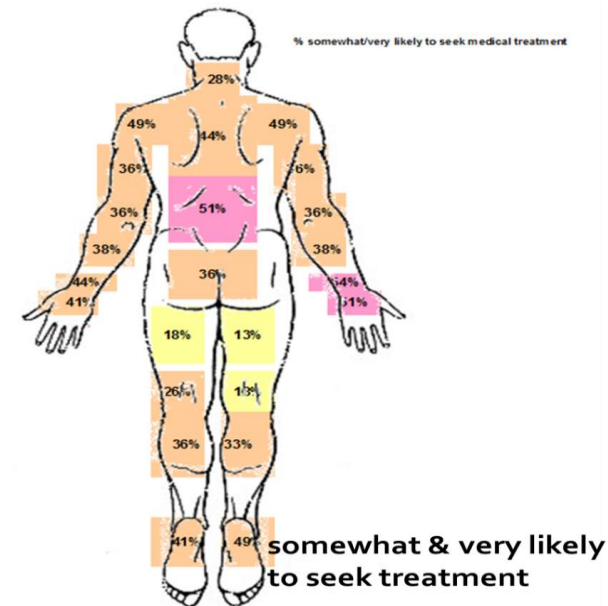
Basis of App - MSD Survey

MSD survey

- 2 parts:
 - **body map** to identify where aches/pains are & likelihood of seeking medical attention
 - **exposure questions** – leading to suggestions on how to reduce exposures



International Journal of Industrial Ergonomics 17 (1996) 21–27



An improved musculoskeletal discomfort assessment tool

Robert J. Marley *, Nirmal Kumar

Industrial and Management Engineering Department, 315 RH, Montana State University, Bozeman, MT 59717-0384, USA

Received 15 June 1994; revised 15 September 1994

Occupational
Health Clinics
for Ontario Workers



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des Travailleurs(s)
de l'Ontario

Discomfort Scales

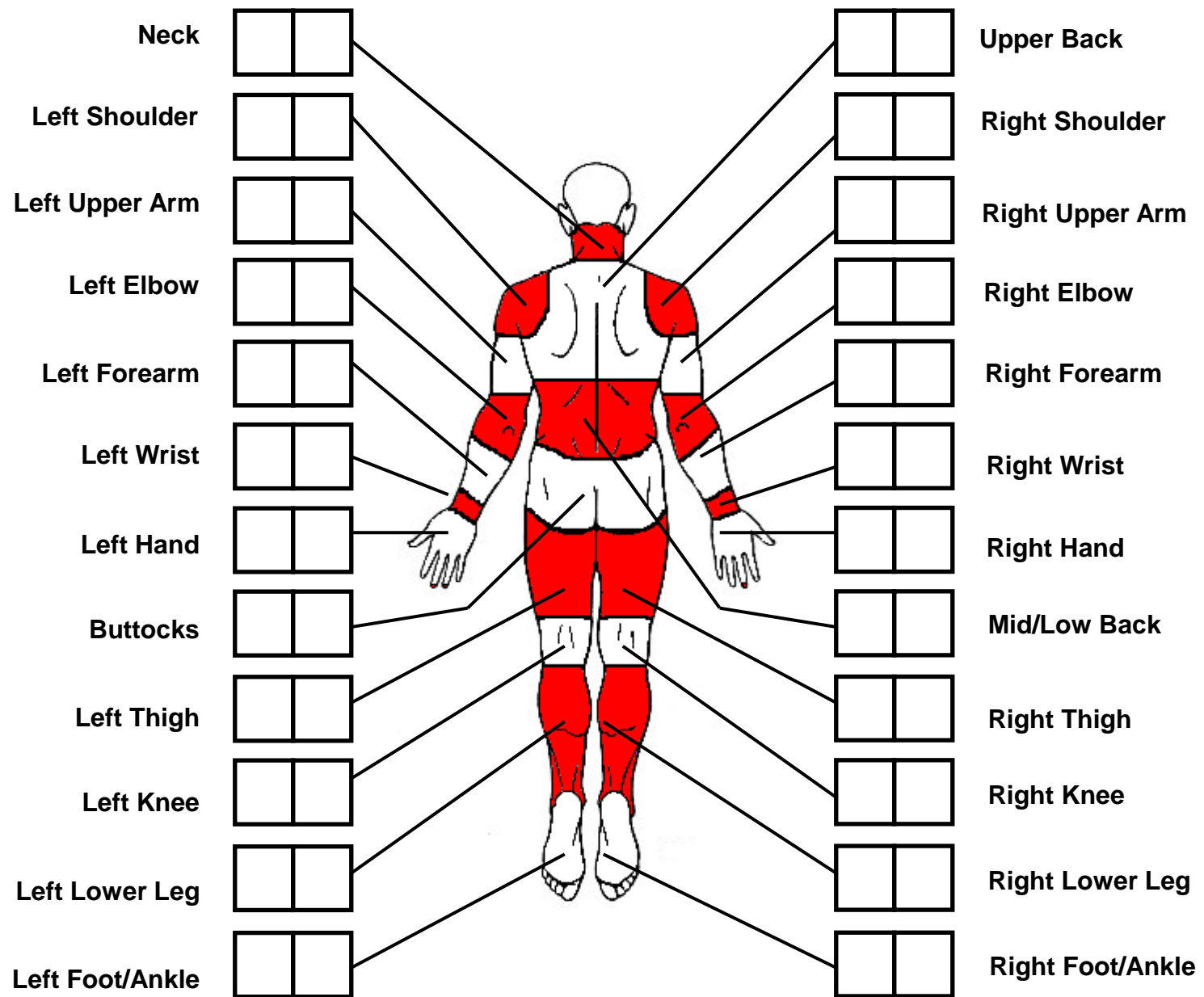
| | |
|----|---------------------|
| 0 | no discomfort |
| 1 | |
| 2 | fairly comfortable |
| 3 | |
| 4 | |
| 5 | moderate discomfort |
| 6 | |
| 7 | |
| 8 | very uncomfortable |
| 9 | |
| 10 | extreme discomfort |

severity



A/0 = never
B/1 = rarely
(few times/month)
C/2 = frequently
(few times/week)
D/3 = constantly
(nearly every day)

**frequency/
probability**



legend

| | |
|---|-----------------------------------|
| 1 | not likely to seek treatment |
| 2 | somewhat likely to seek treatment |
| 3 | very likely to seek treatment |

| freq Discmfrt | B = rarely | C =frequentl | D =constantly |
|------------------|---------------|-----------------|------------------|
| 1 | 1 | 1 | 1 |
| 2 | 1 | 1 | 1 |
| 3 | 1 | 1 | 2 |
| 4 | 1 | 1 | 2 |
| 5 | 1 | 2 | 3 |
| 6 | 2 | 3 | 3 |
| 7 | 2 | 3 | 3 |
| 8 | 2 | 3 | 3 |
| 9 | 3 | 3 | 3 |
| 10 | 3 | 3 | 3 |

USE IN WORKPLACES

Offices

Discomfort

Based on the scales below, please indicate the **amount of discomfort** you have felt at work **in the last month** and **how often you experience it** for **each body region**. An example is provided below.

| No Discomfort | | | | Moderate Discomfort | | | | Extreme Discomfort | | |
|---------------|---|---|---|---------------------|---|---|---|--------------------|---|----|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

Frequency

| Never | Rarely (few/month) | Frequently (few/week) | Constantly (nearly daily) |
|-------|-----------------------|--------------------------|------------------------------|
| A | B | C | D |

EXAMPLE:



| | |
|---|---|
| 5 | C |
|---|---|

A worker is experiencing moderate discomfort in the hand or finger frequently (3 times a week)

| | | | | | | | |
|----------------|---|---|---|-----------------|---|---|---|
| Neck | <table border="1"><tr><td>0</td><td>A</td></tr></table> | 0 | A | Upper Back | <table border="1"><tr><td>0</td><td>A</td></tr></table> | 0 | A |
| 0 | A | | | | | | |
| 0 | A | | | | | | |
| Left Shoulder | <table border="1"><tr><td>0</td><td>A</td></tr></table> | 0 | A | Right Shoulder | <table border="1"><tr><td>0</td><td>A</td></tr></table> | 0 | A |
| 0 | A | | | | | | |
| 0 | A | | | | | | |
| Left Upper Arm | <table border="1"><tr><td>0</td><td>A</td></tr></table> | 0 | A | Right Upper Arm | <table border="1"><tr><td>0</td><td>A</td></tr></table> | 0 | A |
| 0 | A | | | | | | |
| 0 | A | | | | | | |
| Left Elbow | <table border="1"><tr><td>0</td><td>A</td></tr></table> | 0 | A | Right Elbow | <table border="1"><tr><td>0</td><td>A</td></tr></table> | 0 | A |
| 0 | A | | | | | | |
| 0 | A | | | | | | |
| Left Forearm | <table border="1"><tr><td>0</td><td>A</td></tr></table> | 0 | A | Right Forearm | <table border="1"><tr><td>0</td><td>A</td></tr></table> | 0 | A |
| 0 | A | | | | | | |
| 0 | A | | | | | | |
| Left Wrist | <table border="1"><tr><td>0</td><td>A</td></tr></table> | 0 | A | Right Wrist | <table border="1"><tr><td>0</td><td>A</td></tr></table> | 0 | A |
| 0 | A | | | | | | |
| 0 | A | | | | | | |
| Left Hand | <table border="1"><tr><td>0</td><td>A</td></tr></table> | 0 | A | Right Hand | <table border="1"><tr><td>0</td><td>A</td></tr></table> | 0 | A |
| 0 | A | | | | | | |
| 0 | A | | | | | | |

Exposure Questions

- We also asks questions related to physical exposures in the workplace
- This has varied based on the type of work environment

Offices

Please answer the following questions based on your overall experience in the last week.

15. Where is your computer screen in relation to your eyes (choose one)?



☒ Looking level



☐ Looking down

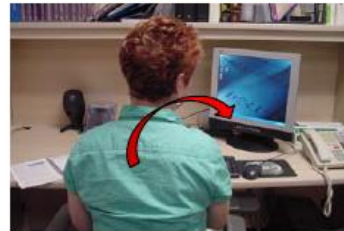


☐ Looking up

16. Where is your computer screen located (choose one)?



☒ Directly in front



☐ Off to a side

17. How do you position your wrist most often when you are mousing?



☒ Straight and level



☐ Bent inwards



☐ Bent Outwards

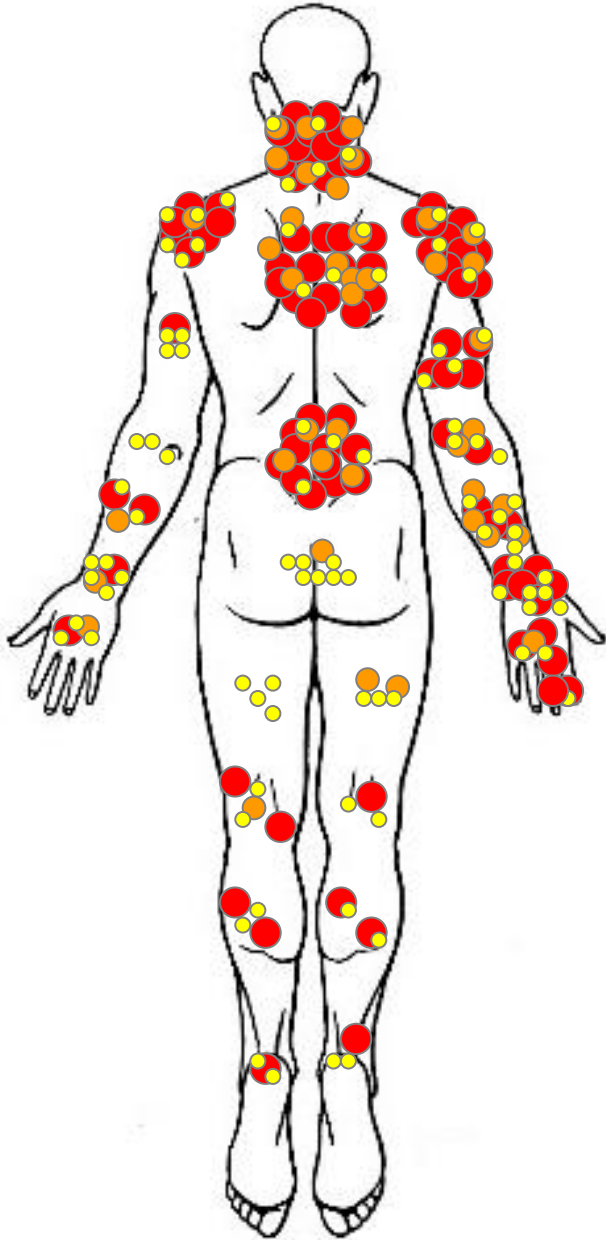


☐ Bent Upwards

Industrial

| | | | | |
|--|----------------------|----------------------------------|------------------------|---------------------------------|
| 1. Overall, how would you rate the <u>comfort of your workstation</u> (circle one)? | | | | |
| Comfortable ₁ | Neutral ₂ | A Bit Uncomfortable ₃ | Annoying ₄ | Very Uncomfortable ₅ |
| 2. Do you have to <u>bend your back</u> in order to do your work (circle one)? | | | | |
| Never ₀ | Rarely ₁ | Once in a While ₂ | Regularly ₃ | All the Time ₄ |
| 3. Do you have to <u>stand in one place</u> for an extended period of time (circle one)? | | | | |
| Never ₀ | Rarely ₁ | Once in a While ₂ | Regularly ₃ | All the Time ₄ |
| 4. Do you have to <u>stretch to reach</u> in order to do your work (circle one)? | | | | |
| Never ₀ | Rarely ₁ | Once in a While ₂ | Regularly ₃ | All the Time ₄ |
| 5. Do you have to <u>twist your body</u> in order to do your work (circle one)? | | | | |
| Never ₀ | Rarely ₁ | Once in a While ₂ | Regularly ₃ | All the Time ₄ |
| 6a. Do you need to <u>lift things</u> in order to do your work (circle one)? | | | | |
| Never ₀ | Rarely ₁ | Once in a While ₂ | Regularly ₃ | All the Time ₄ |
| 6b. How would you <u>rate the effort of lifting</u> (circle one)? | | | | |
| Never ₀ | Rarely ₁ | Once in a While ₂ | Regularly ₃ | All the Time ₄ |
| 7a. Do you need to <u>push or pull</u> in order to do your work (circle one)? | | | | |
| Never ₀ | Rarely ₁ | Once in a While ₂ | Regularly ₃ | All the Time ₄ |
| 7b. How would you <u>rate the effort of pushing or pulling</u> (circle one)? | | | | |
| Never ₀ | Rarely ₁ | Once in a While ₂ | Regularly ₃ | All the Time ₄ |
| 8a. Do you have to <u>grip anything</u> in order to do your work (circle one)? | | | | |

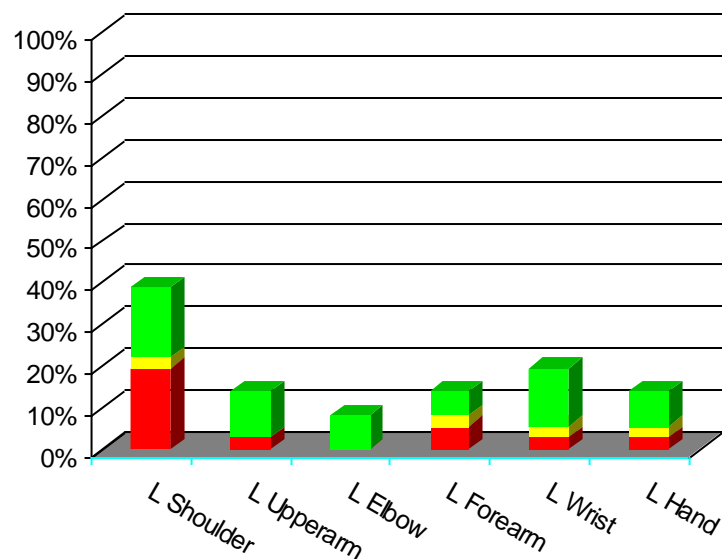
Department X



| | |
|---|-----------------------------------|
| 1 | Not likely to seek treatment |
| 2 | Somewhat likely to seek treatment |
| 3 | Very likely to seek treatment |

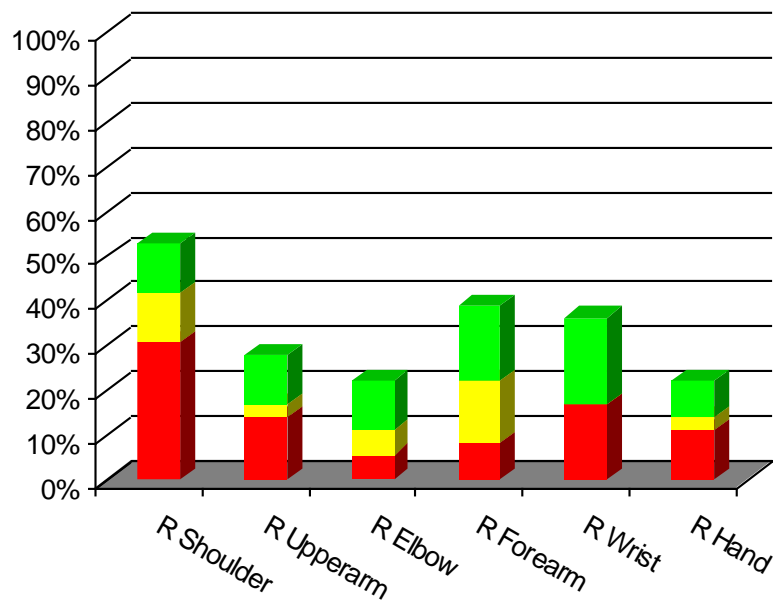
Department X Left Side

| | |
|---|-----------------------------------|
| 1 | Not likely to seek treatment |
| 2 | Somewhat likely to seek treatment |
| 3 | Very likely to seek treatment |



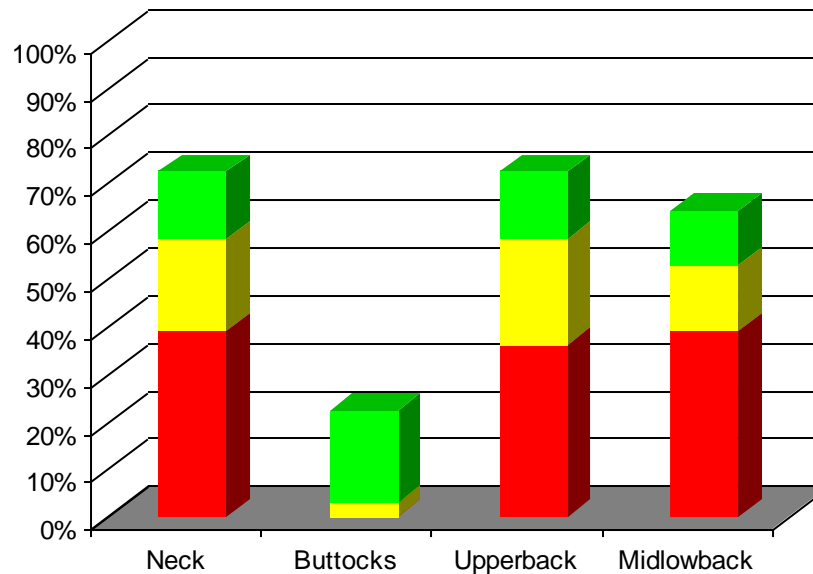
Department X Right Side

| | |
|---|-----------------------------------|
| 1 | Not likely to seek treatment |
| 2 | Somewhat likely to seek treatment |
| 3 | Very likely to seek treatment |



Department X Neck and Back

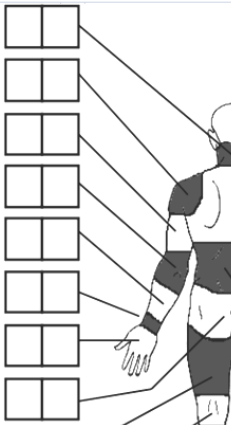
| | |
|---|-----------------------------------|
| 1 | Not likely to seek treatment |
| 2 | Somewhat likely to seek treatment |
| 3 | Very likely to seek treatment |



OH-COW SURVEY TOOL

Spreadsheet Entry

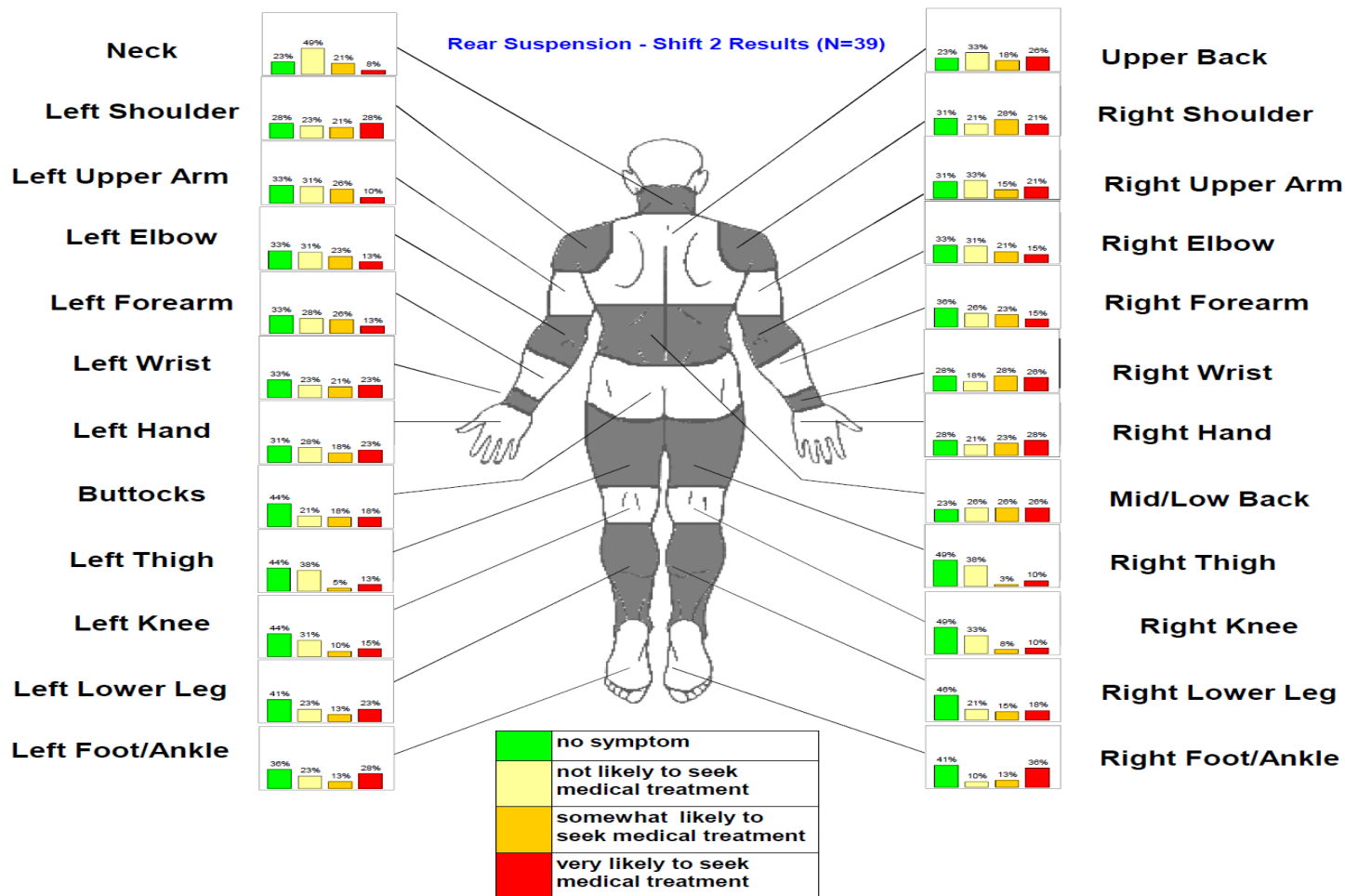
| F17 | | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X |
|-----|--------------------------------------|--------------------------|--------------------------|---|---|------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | enter group name here (type over) | | | | | ID number: | | | | | | | | | | | | | | | | | | | |
| 2 | department: | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | line: | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | job: | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | age category: | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | sex: | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | right or left handed: | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | NECK | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | |
| 10 | LEFT SHOULDER | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | |
| 11 | LEFT UPPER ARM | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | |
| 12 | LEFT ELBOW | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | |
| 13 | LEFT FOREARM | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | |
| 14 | LEFT WRIST | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | |
| 15 | LEFT HAND | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | |
| 16 | BUTTOCKS | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | |



Spreadsheet Entry

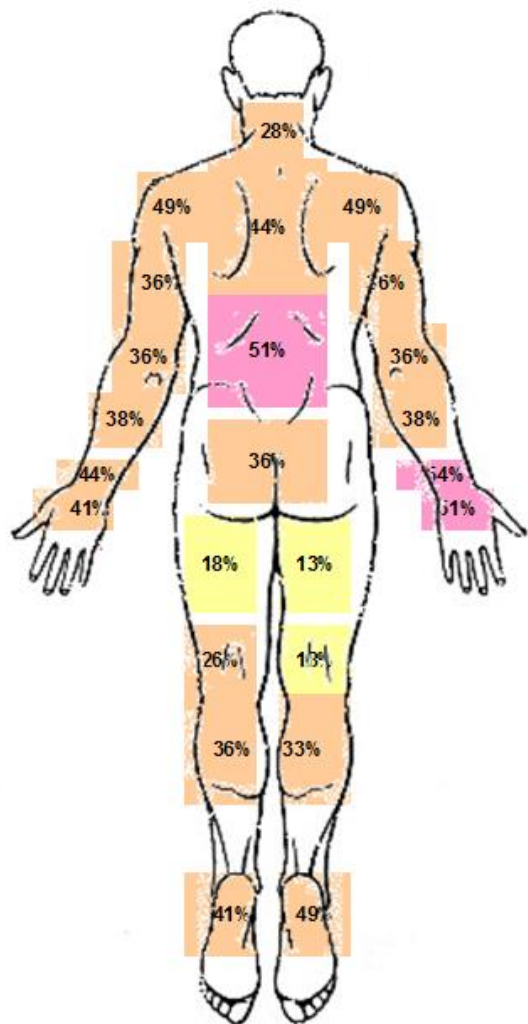
| | | | | | | | | | | | | |
|----|--|---------------------|--|--|--|--|--|--|--|--|--|--|
| 29 | | RIGHT THIGH | | | | | | | | | | |
| 30 | | RIGHT KNEE | | | | | | | | | | |
| 31 | | RIGHT LOWER LEG | | | | | | | | | | |
| 32 | | RIGHT ANKLE OR FOOT | | | | | | | | | | |
| 33 | | | | | | | | | | | | |
| 34 | q1: workstation comfort rating | | | | | | | | | | | |
| 35 | q2: bending | | | | | | | | | | | |
| 36 | q3: standing in one place | | | | | | | | | | | |
| 37 | q4: stretching to reach | | | | | | | | | | | |
| 38 | q5: twisting | | | | | | | | | | | |
| 39 | q6a: lifting frequency | | | | | | | | | | | |
| 40 | q6b: lifting effort | | | | | | | | | | | |
| 41 | q7a: push/pull frequency | | | | | | | | | | | |
| 42 | q7b: push/pull effort | | | | | | | | | | | |
| 43 | q8a: gripping frequency | | | | | | | | | | | |
| 44 | q8b: gripping effort | | | | | | | | | | | |
| 45 | q9: shoulder work | | | | | | | | | | | |
| 46 | q10: number of repetitions | | | | | | | | | | | |
| 47 | q11: vibration exposure | | | | | | | | | | | |
| 48 | Suggestions:(keep typing even if you go beyond space | | | | | | | | | | | |

Department X

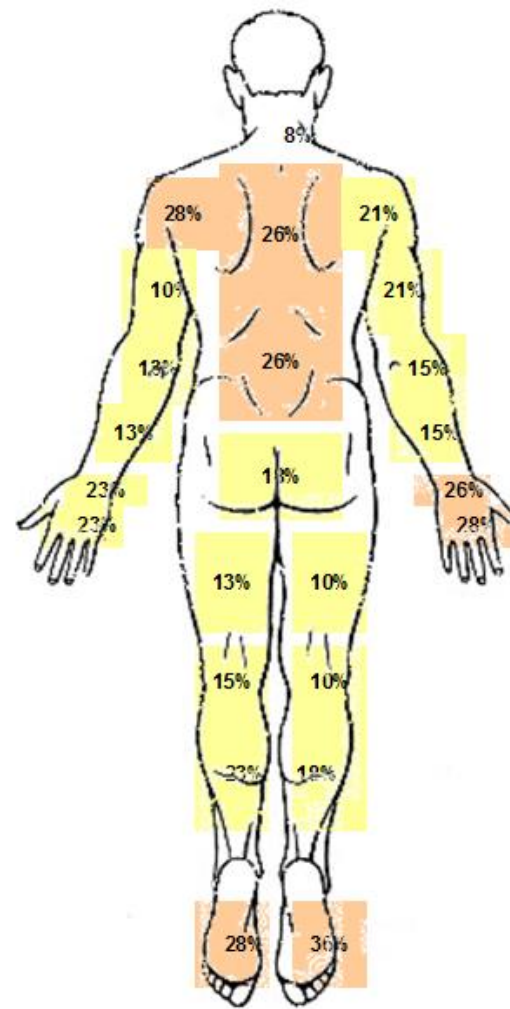


Department X

% Somewhat or Very Likely to seek medical treatment



% Very Likely to seek medical treatment



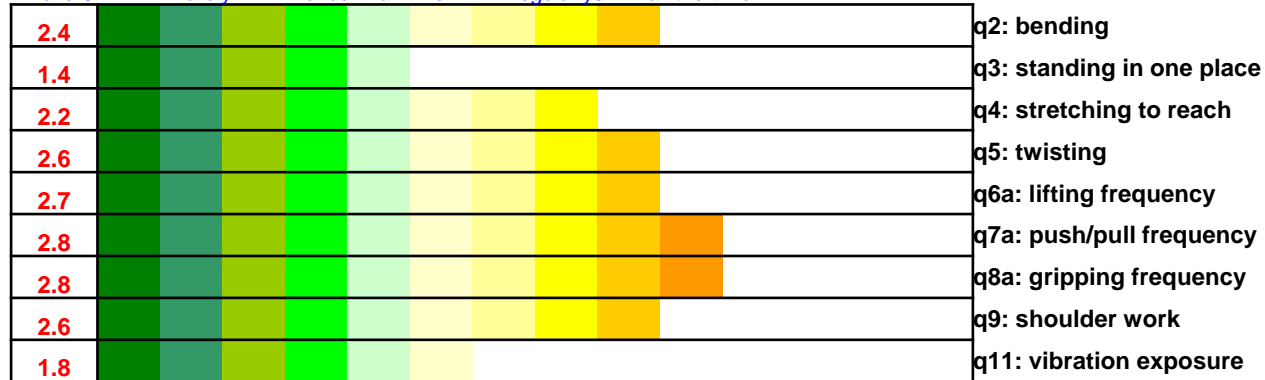
Department X

average
score

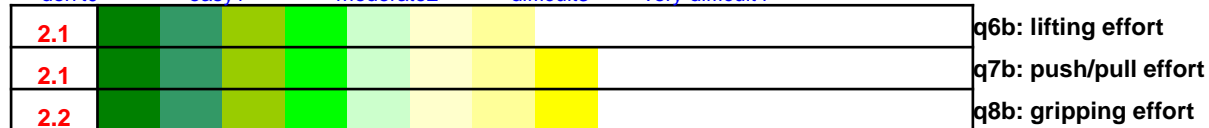
comfortable1 neutral2 a bit uncomfortable3 annoying4 very uncomfortable5



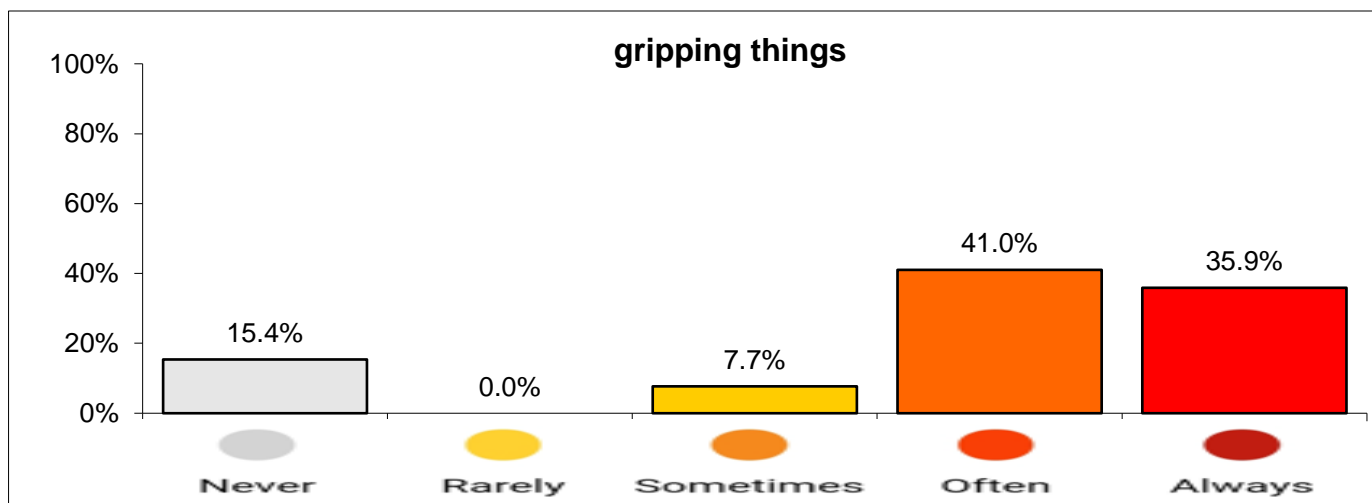
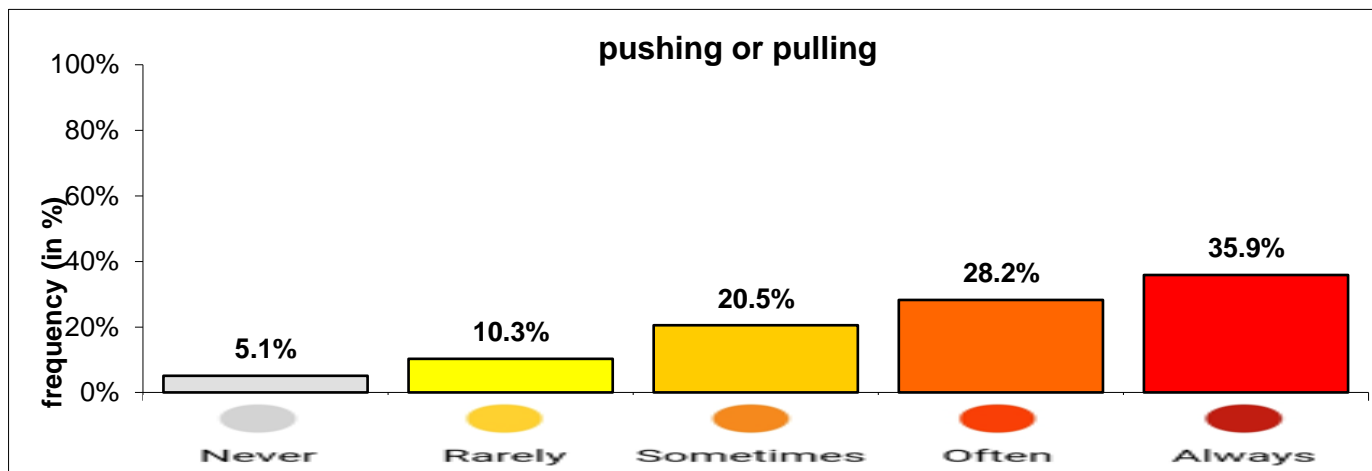
never0 rarely1 once in a while2 regularly3 all the time4



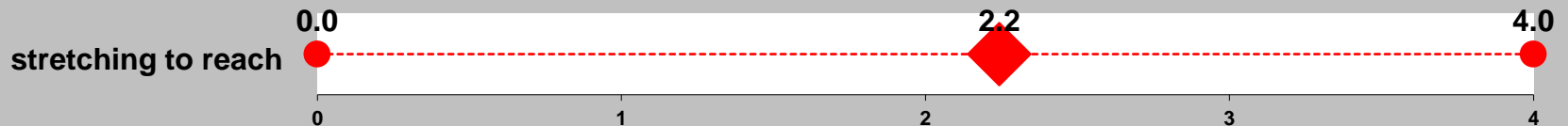
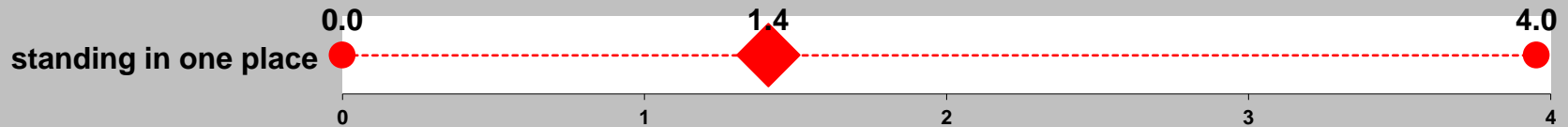
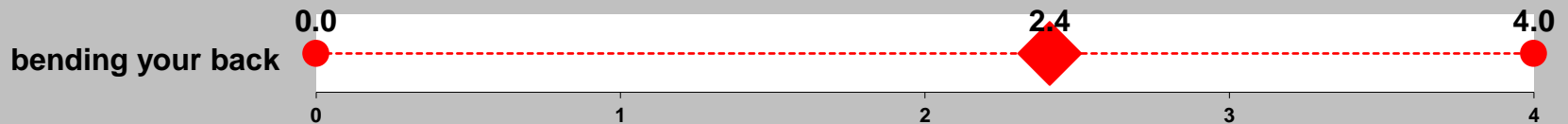
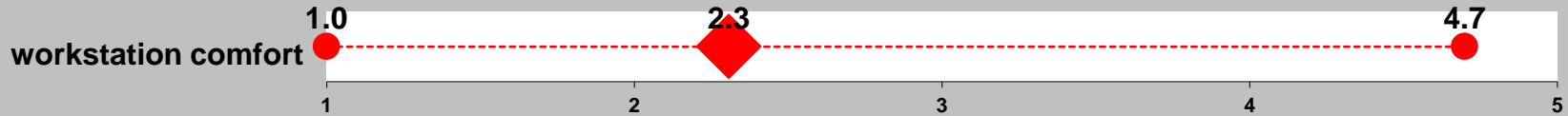
don't0 easy1 moderate2 difficult3 very difficult4



Department X



Department X



DESIGN OF THE APP

User Testing



OHCOW and CCOHS Websites



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PainPoint – Prevent Musculoskeletal Disorders at Work



Download this useful app that delivers a very basic ergonomic assessment by running through a series of diagrams and questions to pinpoint musculoskeletal pain, identify possible sources, and discover practical solutions - right from your smartphone! The results are depicted on a body map, with recommendations to address work-related MSD hazards that could be contributing to your discomfort. No personal data is collected, but summary results can be shared with others (at your discretion) in order to report hazards or foster solutions.

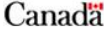
While a professional ergonomic assessment is considered the most effective way to address work-related discomfort, this app is a good first step to help you recognize the signs of MSDs and take action for prevention. For more information, visit the [resources section of our website](#) or to make an inquiry or disc visit, contact us at painpoint@ohcow.on.ca.

This app is the result of a valuable and productive professional collaboration: combining the clinical experience of the Occupational Health Clinic for Ontario Workers (OHCOW) with the technological communication skills of the [Canadian Centre for Occupational Health and Safety \(CCOHS\)](#).



Canadian Centre for Occupational
Health and Safety

Centre canadien d'hygiène et de
sécurité au travail



Canadian Centre for Occupational Health and Safety

www.ccohs.ca

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> PainPoint – Prevent Musculoskeletal Disorders (MSDs) at Work*

This smartphone application (app) delivers a basic ergonomic assessment by stepping the user through a series of diagrams and questions to pinpoint musculoskeletal pain, identify possible sources, and discover practical solutions. The results are presented on a body map, with recommendations to address work-related MSD hazards that could be contributing to their discomfort.



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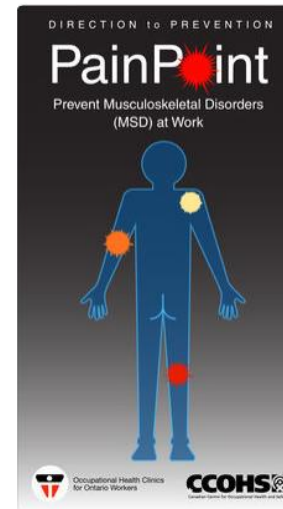
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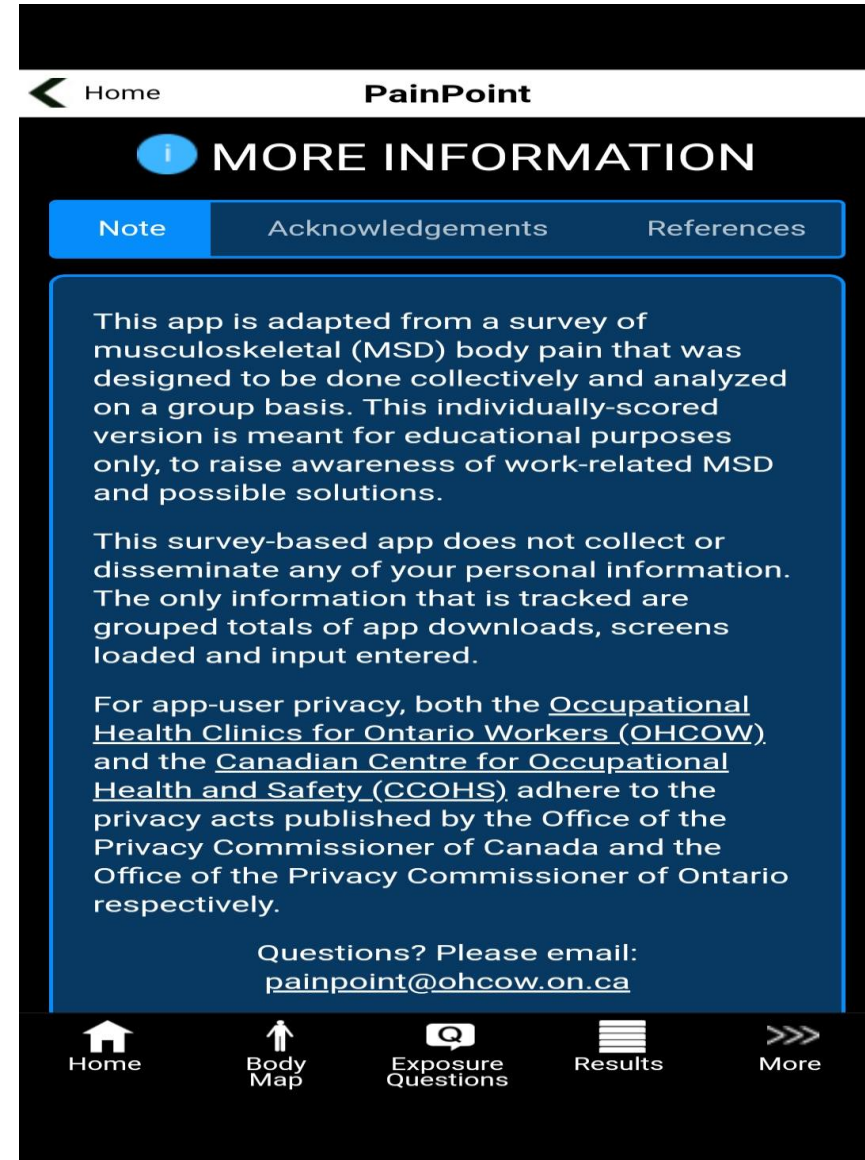
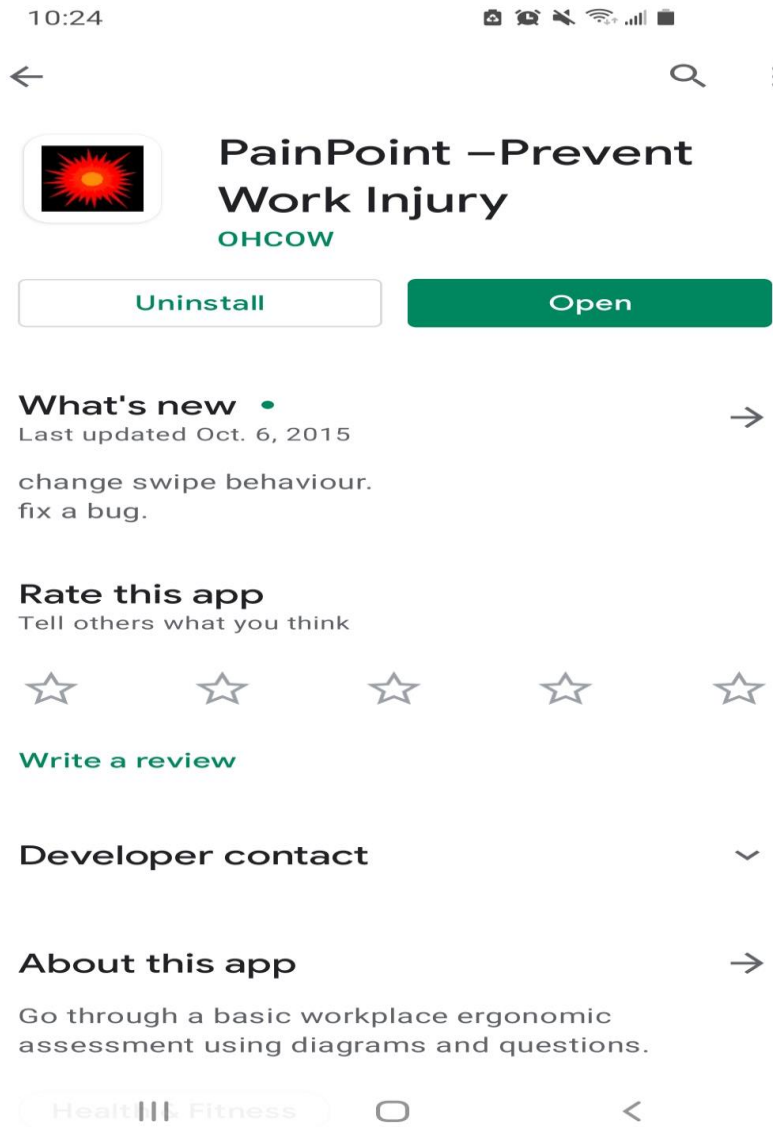
Product Description

Occupational
Health Clinics
for Ontario Workers

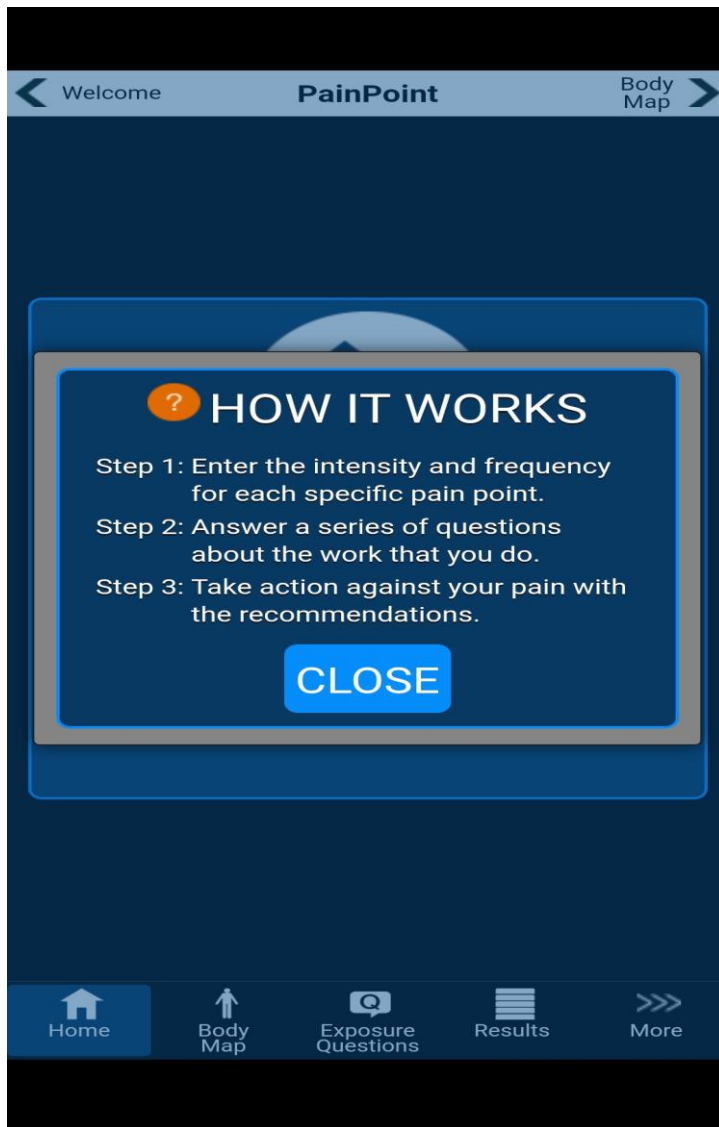


Centre de Santé
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de l'Ontario

Installing on Phones



Using PainPoint



Choose by Body Region or Point on Body Map

Home **PainPoint** Exposure Questions

STEP 1: Select a problem area below.

REGIONS POINTS

Neck and Back

Left Arm

Right Arm

Left Leg

Right Leg

CLEAR I am done entering my pain points >

PAIN LEGEND ^

Home Body Map Exposure Questions Results >>> More

Home **PainPoint** Exposure Questions

STEP 1: Select a problem area below.

REGIONS POINTS

CLEAR I am done entering my pain points >

PAIN LEGEND ^

Home Body Map Exposure Questions Results >>> More

Choose Pain Intensity and Frequency

2:20 [Icons]

Home **PainPoint** Exposure Questions

STEP 1: Select a problem area below.

Enter the intensity and frequency of your pain.

Neck

Intensity

Very Uncomfortable

0 1 2 3 4 5 6 7 8 9 10

Frequency

Never Rarely (few times / month) **Frequently (few times / week)** Constantly (nearly every day)

I am done here. Take me back to the Body Map

PAIN LEGEND

Home Body Map Exposure Questions Results More

Home **PainPoint** Exposure Questions

STEP 1: Select a problem area below.

Enter the intensity and frequency of your pain.

Right Elbow

Intensity

Moderate Discomfort

0 1 2 3 4 5 6 7 8 9 10

Frequency

Never **Rarely (few times / month)** Frequently (few times / week) Constantly (nearly every day)

I am done here. Take me back to the Body Map

PAIN LEGEND

Home Body Map Exposure Questions Results More

Body Map **PainPoint**

Intensity

No Discomfort

0 1 2 3 4 5 6 7 8 9 10

Frequency

Never Rarely (few times / month) Frequently (few times / week) Constantly (nearly every day)

Right Upper Arm

Right Elbow

Right Forearm

Right Wrist

Right Hand

I am done here. Take me back to the Body Map

Home Body Map Exposure Questions Results More

Answer Exposure Questions

PainPoint

Body Map Results

How often do you: Answer the following Exposure Questions

Sit for prolonged periods of time?

Never Rarely Sometimes **Often** Always

Stand for prolonged periods of time with infrequent walking?

Never **Rarely** Sometimes Often Always

Bend forward or twist your back with few pauses?

Never Rarely **Sometimes** Often Always

Lift heavy loads (e.g. objects, tools or people)?

Never **Rarely** Sometimes Often Always

Carry heavy loads more than a few steps?

Home Body Map **Exposure Questions** Results More

PainPoint

Body Map Results

Never Rarely Sometimes Often Always

Work with your neck in an awkward position?

Never Rarely Sometimes **Often** Always

Work with your hands above shoulder level?

Never **Rarely** Sometimes Often Always

Use a keyboard or mouse intensively?

Never Rarely Sometimes **Often** Always

Perform repetitive movements of the arm, wrist or hand?

Never Rarely Sometimes **Often** Always

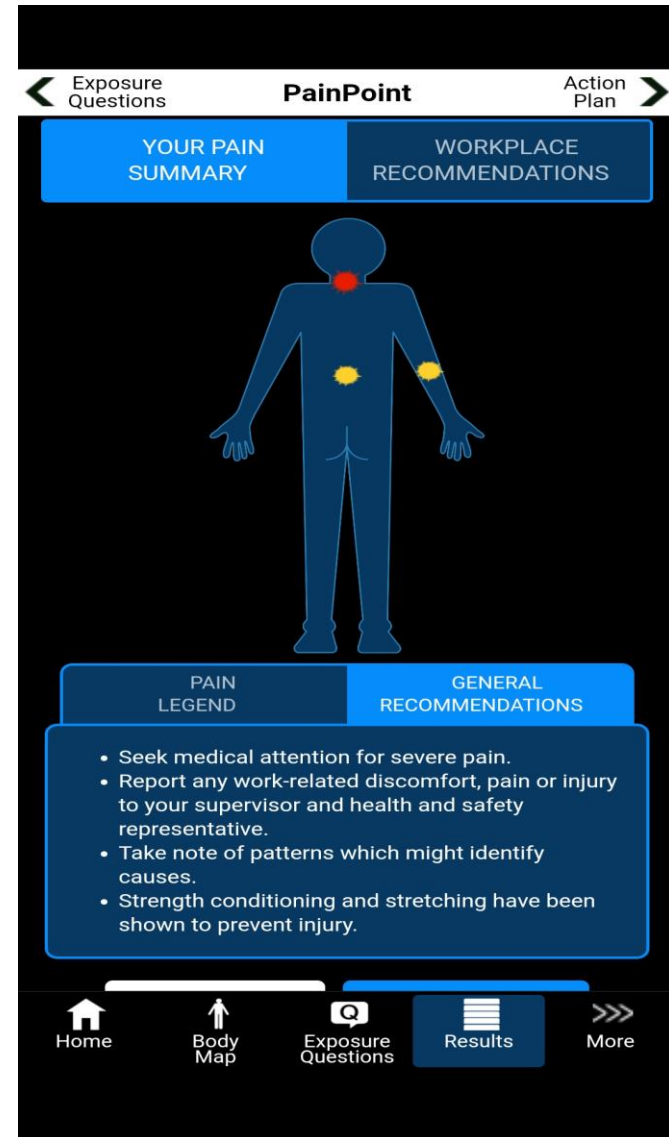
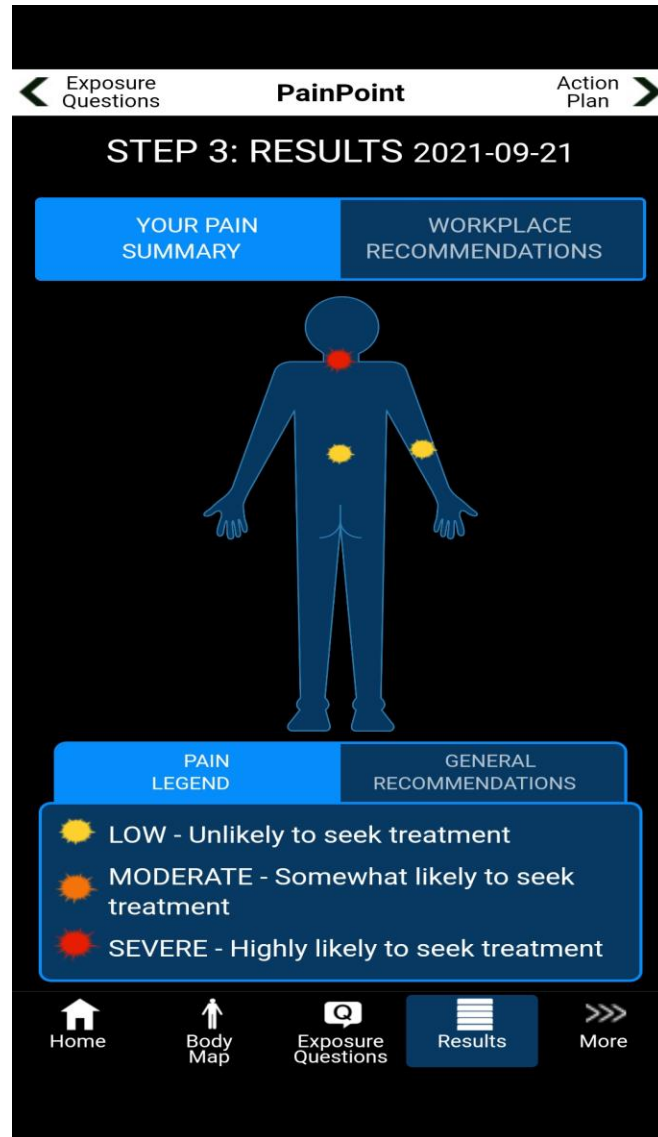
Pinch grip objects between your finger and thumb?

Never **Rarely** Sometimes Often Always

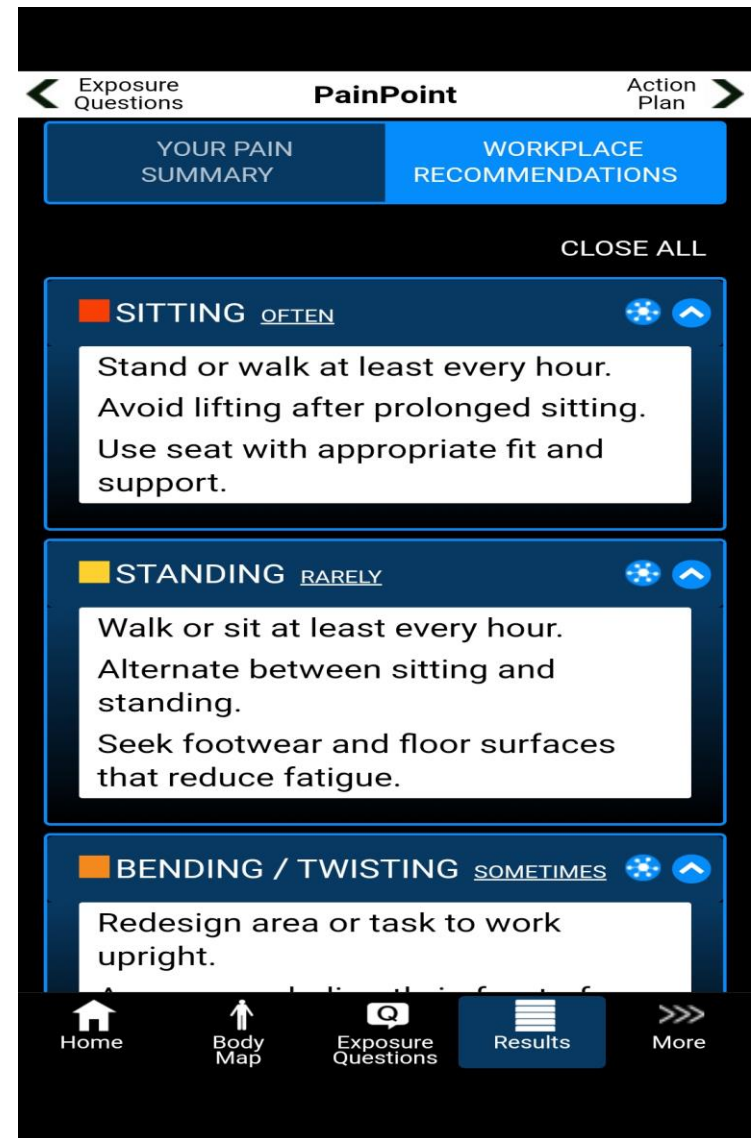
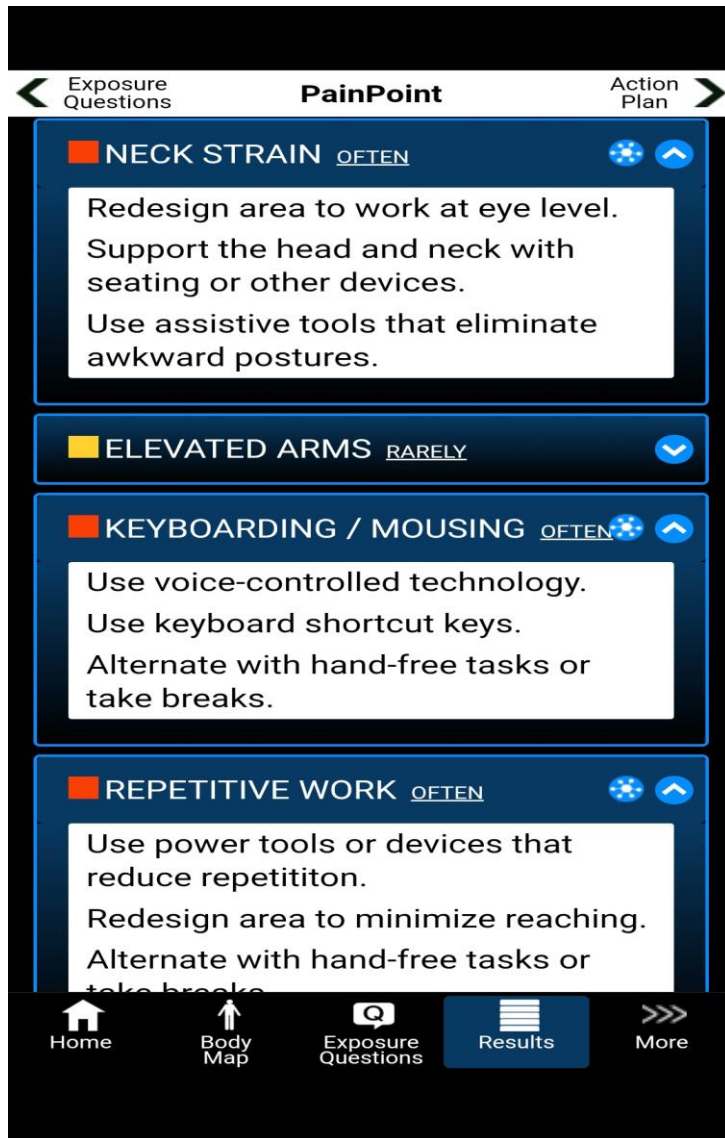
Grip objects with your whole hand continuously or repeatedly?

Home Body Map **Exposure Questions** Results More

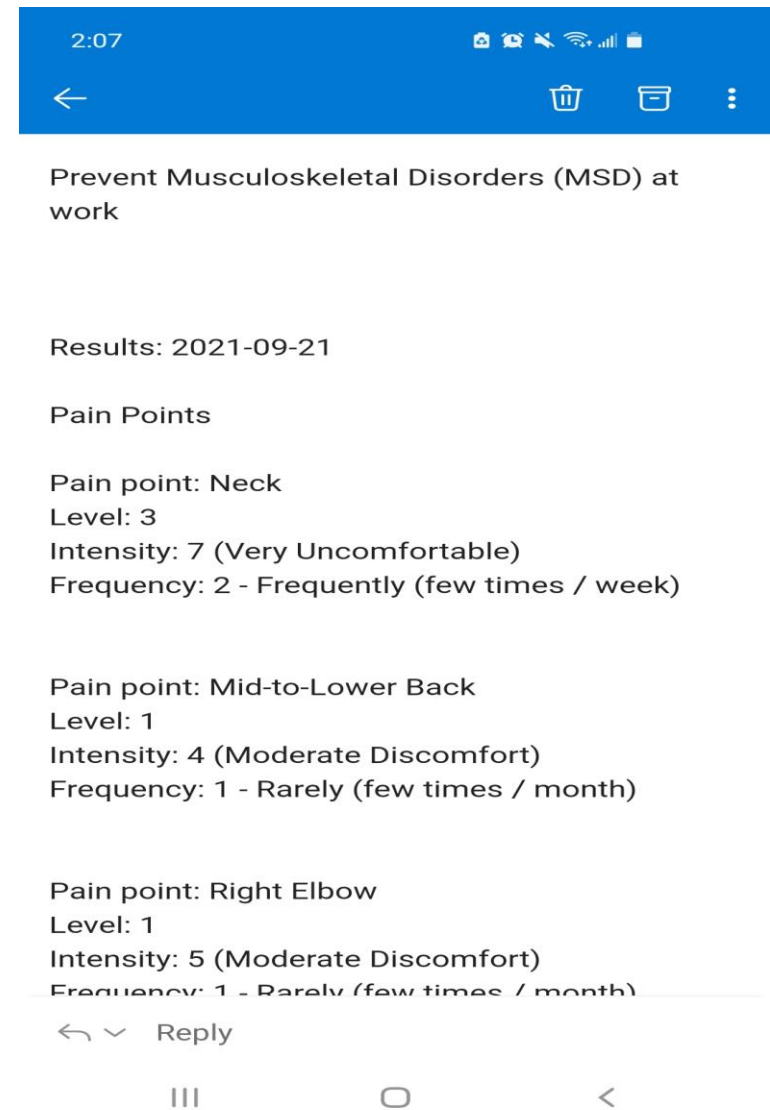
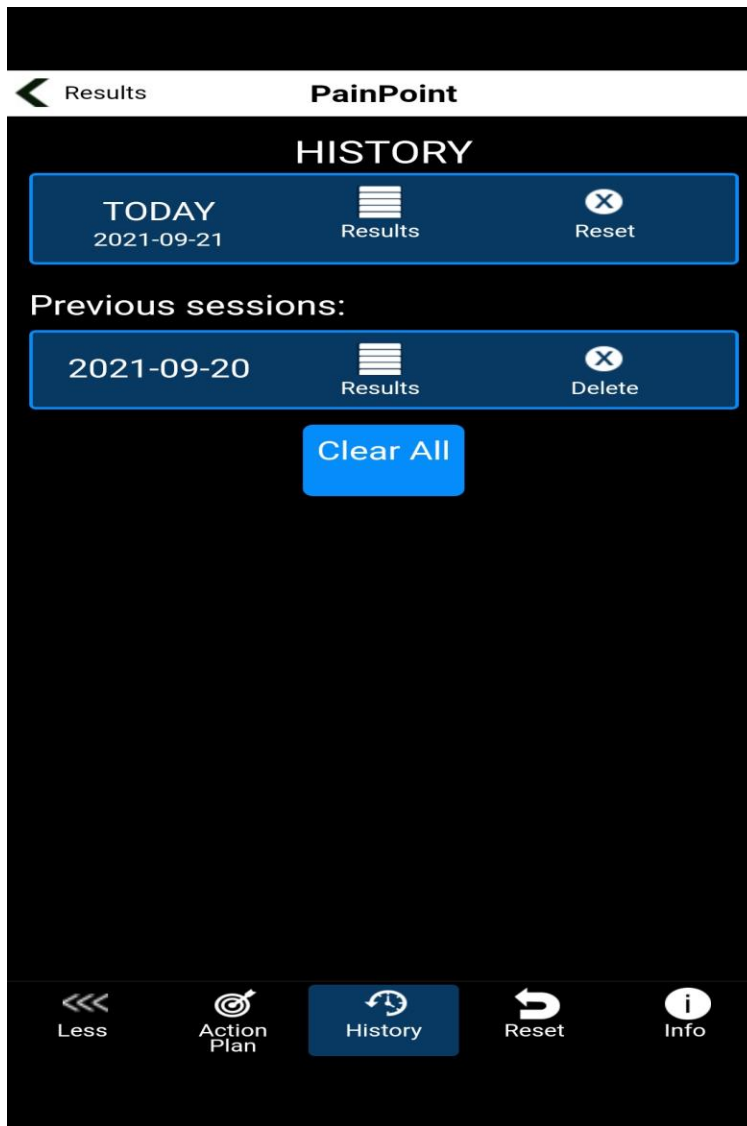
Legend and Recommendations



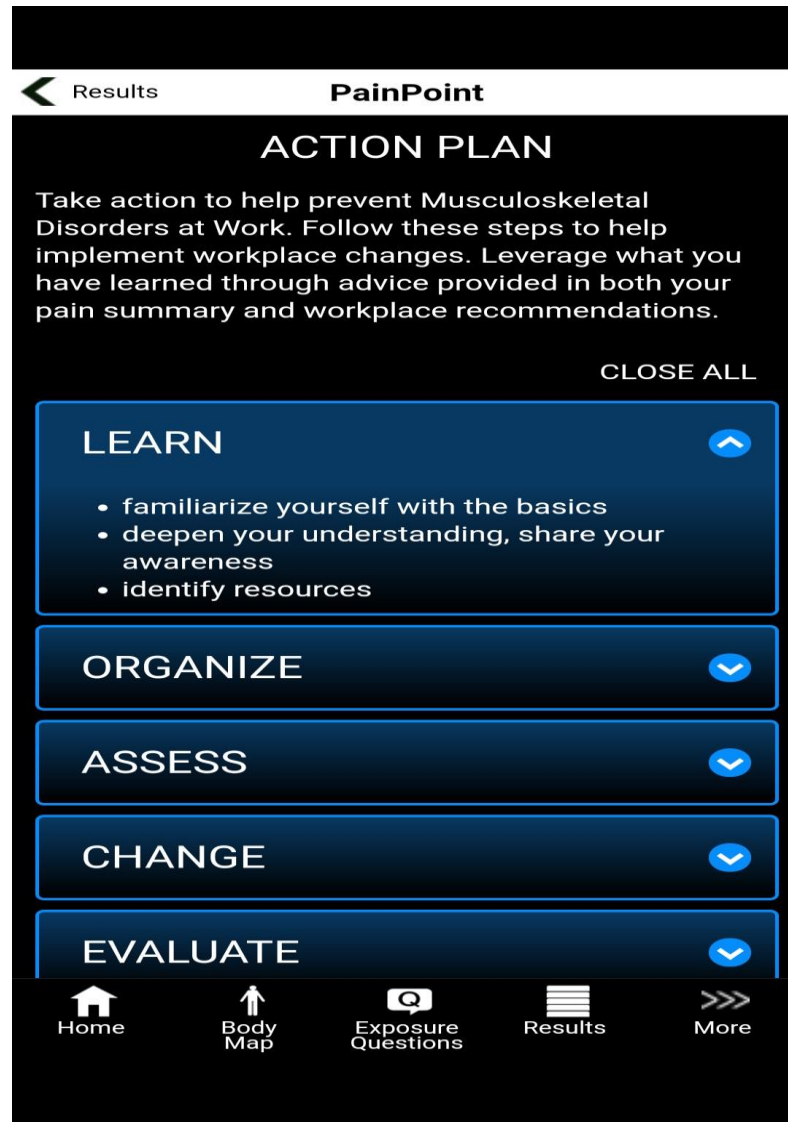
Pain and Hazard Solutions



Save History and Share Results



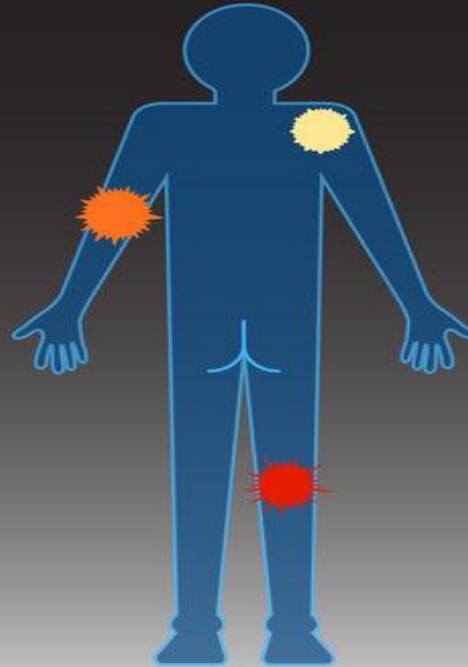
Create an Action Plan



DIRECTION to PREVENTION

PainPoint

Prevent Musculoskeletal Disorders
(MSD) at Work



Occupational Health Clinics
for Ontario Workers

CCOHS
Canadian Centre for Occupational Health and Safety

For more information, visit
<http://www.ohcow.on.ca/painpoint.html>
or contact us
at painpoint@ohcow.on.ca.

Occupational
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des Travailleurs(ses)
de l'Ontario