

Reading a SafeLift Report

COLLECTING DATA FOR SAFE AND RISKY LIFTS



How The Exosuit Measures Movement

Each suit has three movement sensors (one in the backpack and one on each thigh) that detect 3D motion.

These sensors are calibrated when the suit first turns on. If the user does not stand up straight or fails to remain still during this calibration, the data will not be accurate.

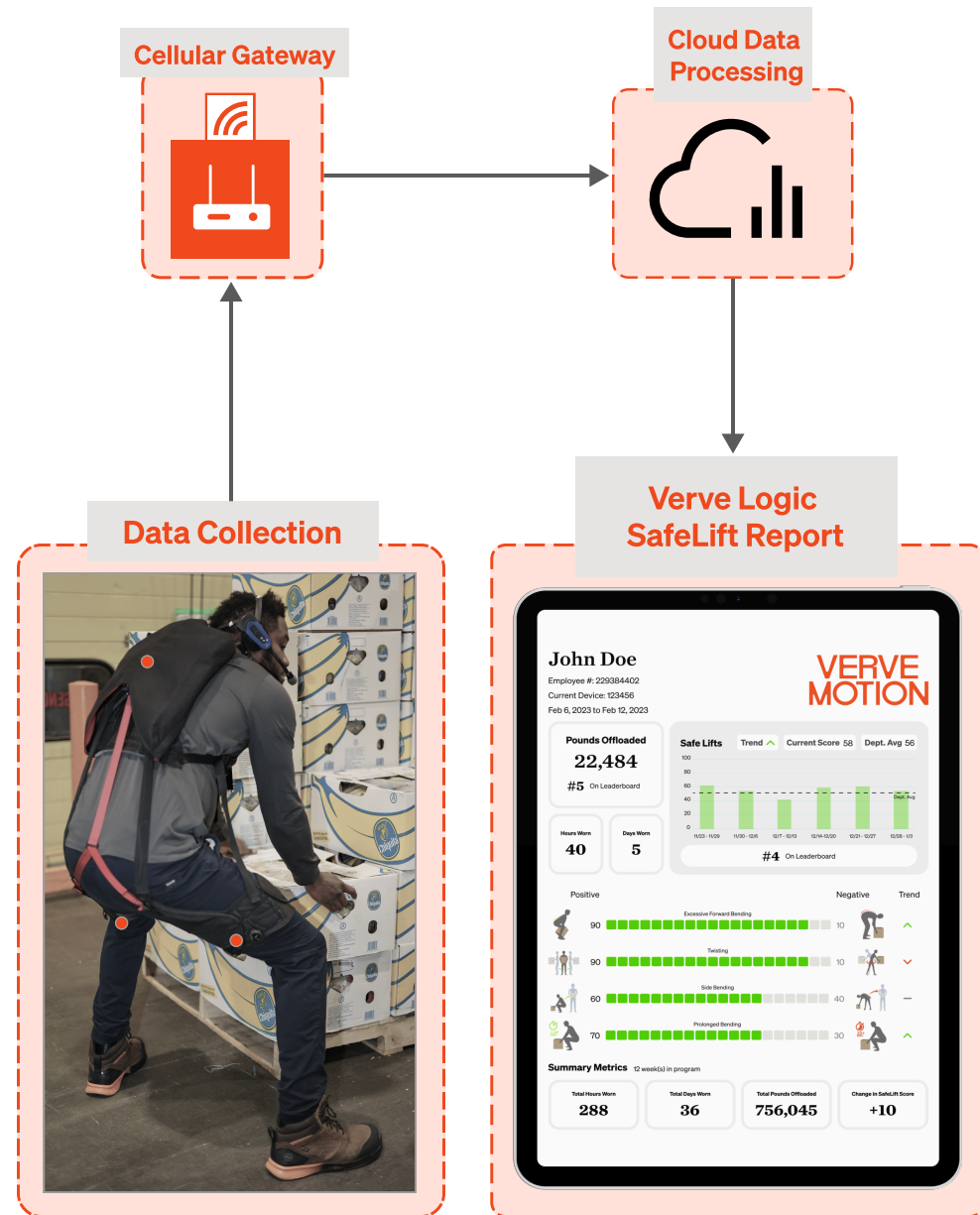
The data collected by these sensors is processed to reconstruct the movement of each user.

Once reconstructed, this movement data is compared against four key movement types to determine if the user is making Safe or Risky movements.

Managers can then download personalized SafeLift Reports from Verve Logic and deliver them to workers, providing feedback on their Risky movements to further reduce the incidence of musculoskeletal disorders.

The data also enables them to determine safety trends across teams and departments, and to find opportunities for ergonomic improvements within their facility.

In addition to the movement sensors, a force sensor in the exosuit measures the force on the ribbon to estimate the weight offloaded from the user's back muscles.



Three IMU sensors (one in the backpack and one in each thigh wrap) collect the 3D motion of the user. These sensors are similar to those found in other consumer electronics, such as a smartphone.

Reading a SafeLift Report

COMPONENTS OF A REPORT

John Doe

Employee #: 229384402
Current Device: 123456
Feb 6, 2023 to Feb 12, 2023



1

Pounds Offloaded

22,484

#5 On Leaderboard

Hours Worn
20/40

Days Worn
5

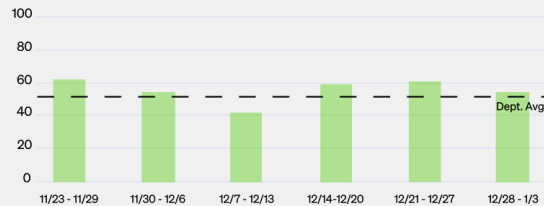
2

Safe Lifts

Trend

Current Score 58

Dept. Avg 56



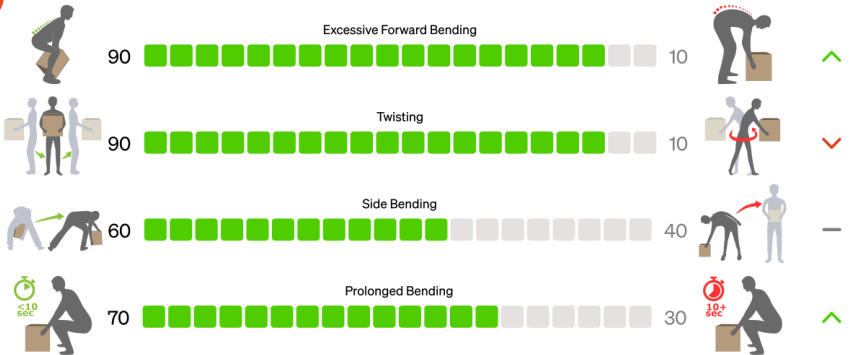
#4 On Leaderboard

3

Positive

Negative

Trend



4

Summary Metrics 12 week(s) in program

Total Hours Worn

288

Total Days Worn

36

Total Pounds Offloaded

756,045

Change in SafeLift Score

+10

1

USAGE SUMMARY

Rolling seven-day reporting window, including:

Weight Offloaded: Lbs or Kgs offloaded during the reporting window. A leaderboard banner is also shown if the user is in the Top 5 for weight offloaded during this period.

Hours & Days Worn: Hours and Days the suit was used during the reporting window. Administrators can specify an hours usage target for each worker, which will appear on reports.

2

SAFELIFT SUMMARY

User's SafeLift trend & score vs department average from reporting window including:

Bar Graph: User's week-over-week SafeLift Scores, going back up to 6 months, compared with the department average.

Leaderboard Banner: Display rank if the worker has a SafeLift Score in the Top 5 for the current seven-day reporting window.

3

MOVEMENT BREAKDOWN

Visualization of Safe vs Risky motions during reporting window:

Movements Graph: The percent of lifts that were deemed Safe (green) or Risky (grey) in the seven-day reporting window for the four measured movements.

[See reverse side for more information.]

Trend: Recent trend in each of the four risky motions. Trends are defined as:

- > + 0.5% Improvement
- ± 0.5% Change
- > - 0.5% Decrease

4

SUMMARY METRICS

User's all-time summary data since they started using the SafeLift exosuit.

*Reports appear in the Preferred Language specified in that worker's Profile in Verve Logic.

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GLOSSARY OF METRICS & KEY RISKY MOVEMENTS

Glossary of Key Terms

Hours Used: Number of hours the exosuit was powered on.

Lift: A bend where the total change in angle of the user's torso and thighs is greater than 15 degrees.

Safe Lift: A lift where none of the risky motions (Twisting, Excessive Forward Bending, Side Bending, or Prolonged Bending) are detected.

Risky Lift: A lift where one or more risky motion (Twisting, Excessive Forward Bending, Side Bending, or Prolonged Bending) is detected.

SafeLift Score: Percent of total lifts that were safe.

[i.e. (# of Safe Lifts) / (# of Total Lifts) * 100]

Weight Offloaded: The equivalent case weight that the user's back muscles did not have to lift due to the assistance provided by the exosuit.

(This value is calculated based on the force on the exosuit ribbon and assumed distances between the exosuit, spine, and case.)

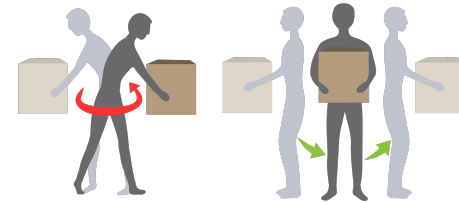
Four Key Movements: Safe vs Risky

The SafeLift™ exosuit collects data on the four movements below, which are often associated with back injuries, to create SafeLift reports.

TWISTING

Definition: User's torso rotates more than 30 degrees relative to their thighs.

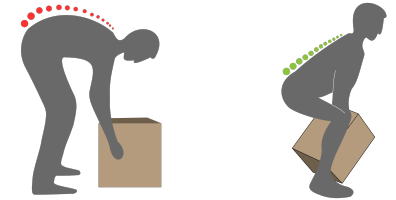
Guidance: Instead of twisting your torso, step with your feet to pivot from one location to the next. Ensure your shoulders are always aligned with your hips.



EXCESSIVE TORSO BENDING

Definition: User bends their torso more than 75 degrees, rounding their back.

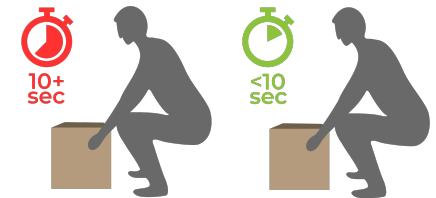
Guidance: Keep your back straight and lift with your legs.



PROLONGED BENDING

Definition: User bends over for longer than 10 seconds.

Guidance: Try to avoid situations that require you to bend over for a long time. If it's unavoidable, brace your body with your hand.



SIDE BENDING

Definition: User bends directly to the side (lateral bending) more than 25 degrees.

Guidance: Align your feet and hips with the item you are lifting and shift your weight from one foot to the other.

