



## Case Study

## Defence and engineering environment

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## Note on anonymity

The organisations involved in these case studies are described by industry rather than by name. This is intentional and respects client confidentiality. If readers require further verification or context, they are welcome to contact me directly, and I will facilitate a connection with the relevant client where appropriate.

## Operating context

This organization operates in a defense and advanced engineering environment where error margins are small and consequences are high. Work involves complex systems, long delivery cycles, and constant performance scrutiny. In this kind of system, internal strain is not usually expressed as emotional distress. It shows up as elevated cognitive load, physical tension, and functional pressure.

A single large-group intervention was introduced to reduce internal load without using clinical or therapeutic framing. Participants rated their mental load and body tension immediately before and after the session on a one-to-ten scale. The evaluation focused only on what was directly measured: changes in self-reported internal load.

## What changed

Across 97 participants:

- Average mental load decreased from 6.55 to 5.41
- Average body tension decreased from 6.01 to 4.77

On a ten-point scale, shifts of around one point are not trivial. Statistical analysis showed large effect sizes ( $dz \approx 0.74-0.77$ ), which, in behavioral science, indicate robust change rather than random fluctuation.

These results support one direct claim: participants reported lower levels of mental load and body tension immediately after the session.

## Where the impact concentrates

The most important pattern appears in the distribution of change rather than in the average.

- **43% of participants reduced mental load by two points or more**
- **39% reduced body tension by two points or more**

A smaller subset showed deeper shifts:

- **About 13% reduced mental load by three points or more**
- **About 18% reduced body tension by three points or more**

On a ten-point scale, a three-point change represents a large reclassification of the internal state. These are not marginal shifts around the mean; they are movements from very high strain bands into lower ranges.

From a systems perspective, this matters because performance risk in complex technical environments is not evenly distributed. It concentrates among individuals operating at the upper extremes of cognitive and physiological load. The observed pattern shows compression at the high end of the strain distribution rather than cosmetic improvement among those already coping adequately.

## Stability as an outcome

Across the cohort:

- **67% improved in mental load**
- **61% improved in body tension**
- **About a quarter to a third reported no change**
- **Only a small minority reported worsening**

In high-pressure environments, the absence of widespread worsening is meaningful. Across participants, very few reported increases in mental load or body tension following the session, indicating that most individuals experienced either improvement or no change in the measured variables.

Where small increases did occur, one plausible explanation—supported in psychological research—is that increased awareness can temporarily raise self-reported strain. Studies on self-monitoring and affect awareness show that when people begin to notice internal states they previously ignored or suppressed, their reported distress can increase even if underlying conditions have not objectively worsened. In this sense, a slight rise in reported load may reflect increased perception rather than increased strain.

This case does not test that mechanism directly. It only shows that a small minority reported higher scores after the session, while the large majority reported either improvement or stability. The possible role of awareness in shaping self-report should therefore be considered as a theoretical explanation, not as a confirmed causal finding in this dataset.

## Interpretation and theoretical alignment

The data make one clear empirical claim: a statistically significant reduction in self-reported mental load and body tension within a single session.

The significance of this lies in its alignment with established theory, not in assumed performance outcomes. Cognitive load theory and working memory research show that high internal strain is associated with reduced working memory capacity and executive functioning. Embodied cognition research shows that physical tension and cognitive processing are interlinked rather than separate systems.

This case does not measure decision quality, accuracy, or performance. It measures internal load. Its relevance lies in the fact that the observed reductions occur in the same internal variables that these peer-reviewed frameworks associate with functional limitation under pressure. The intervention, therefore, demonstrates a measurable decrease in conditions that theory links to impaired functioning, without making claims beyond what was measured.