

Abstract

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Prospective Observational Evaluation of Abdominal and Flank Cryostimulation Using Pressurised Carbon Dioxide Spray for Non-Invasive Waist Contouring

Scientific manuscript draft prepared from the supplied Cryo Body Sculpting case-study data

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Study design	Prospective single-arm observational evaluation
Participants	18 consented participants seeking waist-contour improvement
Intervention	Ten weekly abdominal and flank cryostimulation treatments using the KaasenLife pressurised CO ₂ protocol
Primary endpoint	Serial waist-circumference measurement supported by photographic documentation
Direction of effect	The supplied data report waist-measurement reduction across the cohort
Largest reported reduction	Up to 4 inches in one participant by completion of the course
Participant experience	Reported post-treatment wellbeing and willingness to recommend treatment

Table 1. Executive summary of the most favourable defensible findings from the supplied observational dataset.

Background: Non-invasive body-contouring technologies aim to reduce localised adiposity and improve visible contour while avoiding the morbidity associated with surgical liposuction. Controlled cooling is biologically plausible because adipocytes appear more susceptible to cold-mediated injury than surrounding tissues. The present study evaluated a related but distinct modality: rapid pressurised carbon dioxide (CO₂) cryostimulation delivered using the KaasenLife device.

Objective: To evaluate the feasibility, tolerability and preliminary clinical effectiveness of a standardised abdominal and flank CO₂ cryostimulation protocol for short-term waist-contour improvement.

Methods: Eighteen participants underwent a course of ten weekly treatments. The abdomen and flanks were treated using controlled CO₂ spray while skin temperature and application distance were monitored by the device. Waist circumference and photographic records were obtained

serially during the treatment course. Participants reported no intentional change to diet, exercise or lifestyle routines during the trial, and no other medication or modality equipment was used as part of the trial.

Results: The supplied study reports a consistent favourable direction of change in waist measurements across the cohort, visible improvement in skin firmness and contour, early post-treatment inch loss, and high participant satisfaction. One participant was reported to have achieved up to 4 inches of waist reduction by the end of the course.

Conclusion: Weekly abdominal and flank CO₂ cryostimulation was feasible and well tolerated in this cohort and was associated with encouraging short-term anthropometric and aesthetic improvement signals. The findings are best interpreted as favourable preliminary evidence supporting a larger controlled study with objective imaging endpoints and a predefined statistical analysis plan.

Keywords

Cryostimulation; cryolipolysis; body contouring; waist circumference; carbon dioxide spray; non-invasive fat reduction; KaasenLife.

1. Introduction

Localised abdominal adiposity is a common aesthetic concern and may also contribute to dissatisfaction with body shape and contour. Although surgical liposuction remains an effective intervention for body contouring, its invasive nature, recovery requirements and procedural risks have encouraged the development of non-invasive alternatives. Cold-based body-contouring approaches are of particular interest because adipose tissue is believed to be more susceptible to controlled cold exposure than adjacent skin and connective tissues.

The wider cryolipolysis literature supports the biological plausibility of selective cold-related adipocyte injury, with subsequent inflammatory clearance and gradual contour change reported after treatment. However, the protocol evaluated in the supplied study is not a standard contact-plate cryolipolysis protocol. It uses pressurised CO₂ spray delivered by the KaasenLife device, with treatment technique, skin-temperature monitoring and application distance control intended to cool the treatment area rapidly while reducing risk to the skin surface.

The aim of the present observational evaluation was therefore to determine whether a structured course of gaseous CO₂ cryostimulation could produce measurable and visible improvement in waist contour in participants seeking reduction of abdominal and flank adiposity.

2. Study Design and Participants

This study is most accurately described as a prospective single-arm observational evaluation.

Eighteen participants consented to take part because they were dissatisfied with the fat distribution around their waist. The supplied study records that all participants attended weekly appointments and completed a course of ten treatments over ten weeks.

Before treatment, participants were screened for relevant contraindications. The consultation process was reported to exclude eating disorders, body dysmorphia, mental illness and physical contraindications. The safety and comfort of each participant were monitored throughout treatment. Participants stated that they had not intentionally changed their diet, increased their normal exercise, or changed lifestyle routines during the treatment course. No other medication or modality equipment was used as part of the trial.

3. Device and Intervention Protocol

The KaasenLife device delivers a controlled burst of CO₂ spray to the skin surface. The supplied manuscript states that the device monitors both skin temperature and proximity, assisting the trained therapist in maintaining an appropriate spray distance and treatment temperature. A light indicator assists with identification of the target temperature range.

The treatment protocol targeted the front of the abdomen and the flanks. The trained operator used continuous movement of the applicator and selected the black nozzle because of its larger aperture and high-pressure output. Treatment was continued until the target skin surface temperature of approximately 4 degrees C or below was achieved. The same general method was repeated weekly, with waist measurement and photographic documentation collected during the course.

4. Outcome Measures

The principal outcome was change in waist circumference over the ten-treatment course. Serial photography was used as a supporting visual contour measure. Participant-reported experience, including post-treatment wellbeing and willingness to recommend the treatment, was also recorded in the supplied manuscript.

For an academic readership, the waist-circumference endpoint should be presented as a clinically interpretable anthropometric measure rather than as direct proof of adipocyte apoptosis. Waist reduction and visible contour improvement are compatible with treatment-related local tissue effects, but direct confirmation of adipocyte loss would require objective fat-compartment assessment, such as ultrasound, skinfold calipers, three-dimensional imaging or magnetic resonance imaging.

5. Results

The supplied dataset reports a favourable pattern of waist-contour change following the ten-week treatment course. The authors observed reduction in waist measurement across the cohort and

described visible skin firming and tightening compared with baseline. Early inch loss was reported after the first treatment, which the original manuscript attributes to an acute tissue-tightening response to cold exposure.

By the end of the course, all participants were reported to have achieved a smaller waist measurement, with the greatest reported individual change being up to 4 inches. Participants also reported feeling invigorated or experiencing wellbeing after treatment, and the supplied study states that participants would recommend the treatment to friends and family for body sculpting.

The strongest scientifically defensible interpretation is that the intervention was associated with coherent short-term anthropometric, aesthetic and participant-perceived benefit signals. Because the supplied study does not include a control group or inferential statistics, the results should be described as consistent, encouraging and clinically favourable rather than as statistically proven.

6. Discussion

The principal strength of the supplied study is the consistency of the observed direction of effect under a repeated and structured treatment protocol. A ten-week intervention period provides a useful short-term clinical window in which to observe both immediate tissue-tightening responses and progressive contour changes. The reported waist-measurement reductions, combined with visual observations of skin firmness, provide a favourable proof-of-concept signal for CO₂ cryostimulation as a non-invasive waist-contouring approach.

The findings also align with the broader biological rationale for cold-based body-contouring treatments: controlled cooling may trigger local adipocyte stress and subsequent tissue remodelling over time. However, the present cohort did not directly measure apoptosis, adipose browning, endocrine signalling, lymphatic clearance or changes in fat-layer thickness. These mechanisms should therefore be presented as plausible explanatory pathways rather than confirmed outcomes of this study.

From a favourable academic perspective, the study should be framed as a promising translational dataset. It supports the feasibility of the treatment protocol, demonstrates a consistent clinical signal, and justifies a more rigorous follow-on study. A subsequent trial should include a sham or untreated control group, blinded outcome assessment, standardised waist-measurement technique, objective imaging, adverse-event reporting and a predefined statistical analysis plan.

7. Limitations

Several limitations should be acknowledged to improve credibility with academic readers. The study was single-arm and observational, so causality cannot be established with the same confidence as in a randomised controlled trial. Participant behaviour was self-reported rather than independently monitored. Waist circumference is clinically meaningful but can be influenced by measurement technique, posture, hydration, gastrointestinal contents and short-term tissue effects. The study did not include blinded assessment, objective imaging of fat-layer thickness, long-term follow-up or formal statistical testing.

These limitations do not negate the favourable findings. Instead, they define the appropriate

evidence category: an encouraging preliminary study with a consistent treatment-associated signal that warrants controlled evaluation.

8. Conclusion

In this prospective observational cohort, ten weekly treatments of abdominal and flank cryostimulation using pressurised CO₂ spray were feasible, apparently well tolerated and associated with favourable short-term changes in waist contour. The supplied study reports waist-measurement reduction across the participant group, visible skin-firmness improvement, positive participant experience and a maximum reported waist reduction of up to 4 inches in one participant.

The most academically robust conclusion is that CO₂ cryostimulation using the KaasenLife protocol shows promising preliminary potential as a non-invasive waist-contouring intervention. The observed findings support further investigation in a larger controlled study using objective fat-thickness measurement, blinded analysis and longer-term follow-up.

Table 2. Defensible reporting language for favourable outcomes

Outcome domain	Favourable wording	Rationale for academic tone
Waist circumference	Consistent reduction in waist measurements was observed across the cohort.	Avoids claiming statistical significance without formal testing.
Visual contour	Serial photography supported visible improvement in abdominal contour and skin firmness.	Separates observational evidence from mechanistic claims.
Early response	Early inch loss may reflect an acute tissue-tightening response to cold exposure.	Presents a plausible explanation without overstatement.
Participant perception	Participants reported favourable post-treatment wellbeing and willingness to recommend.	Keeps subjective outcomes clearly labelled as participant-reported.
Overall interpretation	The findings provide encouraging preliminary evidence and justify controlled follow-up.	Favourable but credible for academic review.

References for scientific positioning

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Appendix: recommended data enhancements before academic submission

- Add a participant-level table with baseline waist, final waist, absolute change, percentage change and completion status.
- Report the mean, median, standard deviation and range for waist-circumference change.
- State the exact measuring protocol, including anatomical landmark, tape tension, posture and whether measurements were blinded or duplicated.
- Add a standardised adverse-event table, even if no adverse events occurred.
- Retain before-and-after images only where documented consent for academic use has been obtained; crop and anonymise where appropriate.
- Use ultrasound or equivalent imaging in a follow-on study to distinguish fat-layer change from transient tissue tightening.

Prepared as an academically toned manuscript draft from the supplied case-study material. Claims should be checked against the original dataset before submission.