

Compression garments for pain management, comfort and freedom of movement in lipoedema patients: clinical benefits of JOBST® Confidence

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Myth about the disease lipoedema and its treatment are common, not only among patients, but also healthcare professionals. While there is growing public awareness of this disease, there is still a field of misinformation, misunderstandings and consequently insufficient treatment. Limited research and a lack of objective diagnostic tools contribute to this unsatisfying situation.

We urgently need a different approach, a paradigm shift, in order to provide the best possible care for our lipoedema patients. Therefore, the newly founded International Lipoedema Association (ILA) has begun to collaborate on a global level. The ILA provides a platform for healthcare professionals aiming at increasing knowledge about lipoedema, building bridges among healthcare professionals and patients, and contributing to much needed research.

Meanwhile we also need to understand the real struggles and needs of our lipoedema patients in order to apply a truly patient-centered therapeutic concept.

For decades lipoedema was considered as an 'oedema-disease'. In the meantime, we have convincing scientific evidence that there is neither oedema nor lymphatic insufficiency in patients with lipoedema which makes manual lymphatic drainage (MLD) dispensable.

So, what are the real complaints of our patients:

- Pain in the soft tissue of the legs
- Psychological burden, which increases pain perception
- Weight gain due to the accompanying obesity
- Poor fitness because of obesity and pain in the legs
- Lack of self-acceptance because of the current beauty ideal which prefers thin legs (Bertsch et al, 2020).

To address all these concerns, a holistic and interdisciplinary therapeutic treatment concept is necessary and was therefore created and published in 2020 by renowned experts in this field (Bertsch et al, 2020). And with no doubt, compression therapy is one of the cornerstones of this treatment—not because of any oedema, but because of its anti-inflammatory impact on the adipose tissue.

In an era where compression products are produced with innovative technologies, the patient's needs and complaints can be addressed even more precisely. The JOBST® Confidence range of flat-knit garments, and in particular the new panty-style, considers that lipoedema patients suffer from pain and, in particular, from tender-to-touch skin. Therefore, they desire garments which fit well, are comfortable and allow for excellent movement during the day.

The case reports published in this supplement demonstrate the efficacy and benefits of the JOBST® Confidence panty in lipoedema patients and its contribution to pain reduction, better movement, and an improved quality of life.

We need to collaborate further to gather clinical evidence and establish the standardisation of lipoedema management.

CWC

Bertsch T, Erbacher G, Elwell R. Lipoedema: a paradigm shift and consensus. *J Wound Care*. 2020 Nov 1;29(Sup11b):1-51. <https://doi.org/10.12968/jowc.2020.29.Sup11b.1>

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Lipoedema: what it is

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Lipoedema is a chronic disease which is characterised by a disproportional increase in adipose tissue and pain in the legs, which are often tender to touch. The lower body (often hips/buttocks and legs) are much bigger compared with the upper part of the body. The increase of adipose tissue is symmetrical in both legs, and the feet are spared, though there is often a bracelet effect at the ankle. The arms may also be affected, though not the hands (Bertsch et al, 2020). Despite the name, oedema is not a characteristic of pure lipoedema. However, it may be present if other comorbidities pre-exist (e. g. obesity, lymphoedema, chronic venous insufficiency or cardiac insufficiency).

Lipoedema is a disease that only affects women and is typically associated with phases of weight gain (e. g. during hormonal changes such as at times of puberty, pregnancy and menopause). Years later (usually after more weight gain), the disease becomes apparent with painful legs and then meets the diagnostic criteria for lipoedema (Bertsch et al, 2020). Genetic disposition is thought to play a part in the development of lipoedema; some genes have been determined, but further research needs to be done, given the limitations of current publications.

Epidemiological data do not exist, and quite often, the disease is misdiagnosed and confused with lymphoedema, lipohypertrophy, and in particular, obesity.

There is, however, a close correlation between being overweight, being obese and lipoedema. Data show that 80–88% of lipoedema patients are obese (Child et al, 2010; Bosman, 2011; Bertsch and Martin, 2015; Herbst et al, 2015; Dudeck et al, 2018; Bertsch et al, 2020) at assessment and as such, require help, advice and support on how best to manage this.

As intimated above, the term lipoedema remains misleading and therefore a renaming process has been initiated (International Lipoedema Association (ILA), 2022). There is no relevant oedema in lipoedema i. e., no excessive amounts of interstitial fluid. Therefore, treatments such as manual lymphatic drainage (MLD) can only have an effect due to the touch and personal attention, like any other massage would have on discomfort or

anxiety. If oedema does coexist, however, then MLD will have a part to play in reducing lymphatic overload.

What do patients struggle with and why?

From a pathogenic point of view, there is still a lack of evidence and a number of questions need to be addressed.

However, there is a pathophysiological model that explains the main symptom of pain quite well. An increase in weight means an increase in adipose tissue. This leads to an increased level of hormones, adipokines in the tissues, which are responsible for low-grade inflammation. At the same time, the adipose expansion results in tissue hypoxia (Rutkowski, 2009; Bertsch et al, 2020). Both, inflammation and hypoxia, lead to pain.

This pain is further exacerbated by chronic stress, anxiety and depression. A pilot study by Erbacher and Bertsch (2020) shows that patients with sustained mental stress over a long period of time reported more severe pain on the visual analogue scale (VAS) (Bertsch et al, 2020; Erbacher and Bertsch, 2020). Chronic stress itself can cause an increase in inflammatory markers.

Psychological issues play a major role in the disease lipoedema. It is not a mental illness; however, the symptoms are fuelled by the patient's pre-existing psychological vulnerability, lack of self-acceptance, and low self-esteem. It is, therefore, important to be aware of this complex interaction of mind and body, and to pursue a holistic treatment approach. The components of this are summed up in *Figure 1*.

The role of compression therapy

Compression therapy plays a central role in the treatment of lipoedema. However, this is not to reduce the oedema, as oedema is generally not present, but to reduce the low-grade inflammation. Despite the lack of scientific data to prove

As there is still a lot of professional disagreement around the disease lipoedema and a lack of scientific data, the International Lipoedema Association (ILA) has recently been founded. It consists of a group of founding members from 22 countries worldwide and from different disciplines needed to treat lipoedema in a holistic manner. Its aim is to create the best possible treatment for lipoedema patients by collaborating in an international, diverse, inclusive and multidisciplinary team. The holistic treatment approach is based on clinical evidence, long-standing experience and a passion for improved therapy outcomes.



Figure 1. Components of a holistic treatment for lipoedema (Bertsch et al, 2020).

this in lipoedema patients, studies in phlebology and sports medicine show a remarkable effect of compression garments on the inflammatory process in subcutaneous tissue (Kramer et al, 2000; Korschake et al, 2017; Bertsch et al, 2020). Moreover, there is a synergistic anti-inflammatory effect of both compression therapy and active movement. Therefore, these therapeutic options have also a positive impact on the tissue hypoxia (Bertsch et al, 2020).

Apart from providing symptomatic relief, compression therapy also exerts a supportive effect on the soft tissue, reduces mechanical impairment of movement from skin lobes rubbing against each other and improves mobility. Compression garments also help to streamline the limbs, offering improved cosmesis. In a small number of cases when the patient has a healthy weight and good limb shape, then circular-knitted products can be considered. However, in general, flat-knit made-to-measure garments are preferred, as most of the patients tend to be obese and have enlarged lobes and limb distortion.

Why JOBST® Confidence for lipoedema patients?

To develop an innovative product which specifically addresses the needs of lymphoedema and lipoedema patients, Essity undertook market research in four countries: Germany, France, US and China (ReD Associates Copenhagen, 2014/2015; Milani Design and Consulting AG, 2019). During this time, it became apparent that both patient groups struggle with similar challenges when wearing compression garments. The patients involved in the market research reported that wearing compression garments constrained their everyday lives by using two knitting patterns instead of one, resulting in poor adherence. The main complaints were that it caused discomfort, that it was hot and sweaty to wear and that it restricted mobility. Poorly fitting garments or uncomfortable materials can make wearing compression garments a challenge, which, especially in lipoedema patients, can further aggravate the tender-to-touch skin and the pain in affected areas. Compression garments often feel sweaty and too warm. When moisture builds up underneath the fabric and inflexible materials often cause restrictions, limiting the patient's range of movement. In response to these market research results, a patient's needs analysis was done.

Furthermore, body scans of patients were conducted, so that the typical anatomy of lymphoedema and lipoedema patients can be better reflected by using two knitting patterns instead of one, which is not the case in traditional garments. By striving to provide a garment which precisely fits the real anatomical shape of each individual patient's limb, and thereby improving comfort and facilitating a greater degree of movement for the wearer, Essity developed JOBST® Confidence, a next generation made-to-measure flat-knit compression garment. Unlike traditional flat-knit garments, where during the knitting process the stitches can only be added or reduced at one position, the addition or reduction in stitches at four positions was made possible by using a special Contour Fit technology (Figure 2).

As pain is the main symptom in lipoedema patients, compression garments need to be soft to the skin while providing good support. To meet these challenges, JOBST® Confidence was made with a supple and conforming fabric that still assures appropriate support for

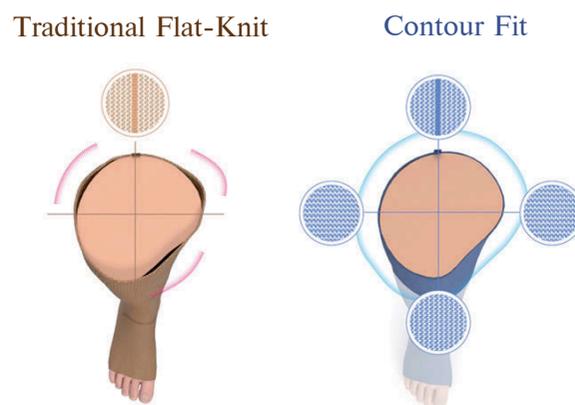


Figure 2. Unlike traditional flat-knit, Contour Fit adapts the fit of the garments at four instead of one position on the limb. This creates a garment that truly replicates the unique form of the patient's body. Special contour points show where the garment has been individually tailored to allow the patient to move freely.

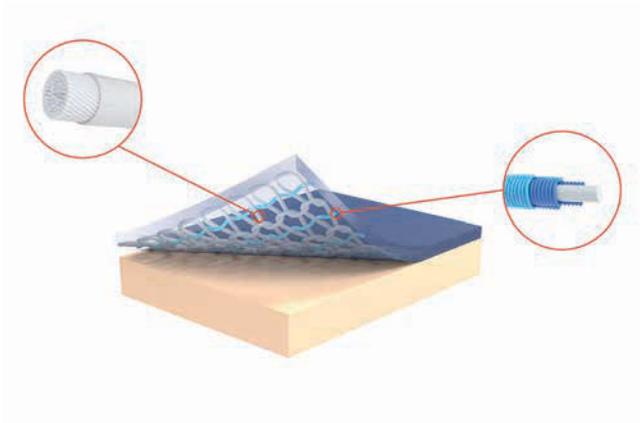


Figure 3. Softer yarn supports a pleasant feeling on the skin and also gives the assurance of a firm, contouring support. Special knitting construction also helps to provide more flexibility and comfort.

the tissues (*Figure 3*).

Furthermore, sweating and heat build-up are typical issues mentioned by lipoedema patients. JOBST® Confidence provides a unique way of moisture management to answer these needs (*Figure 4*).

Compression therapy combined with exercise is the cornerstone for treating pain in lipoedema patients. Even though every patient is unique and requires an individually adapted, holistic treatment approach, the key need of being comfortable in one's skin, including the compression garment as the patient's second skin, is universal. If this need is not optimally addressed, adherence to compression therapy will drop and the symptoms will be more difficult to manage. Having this in focus, Essity further designed

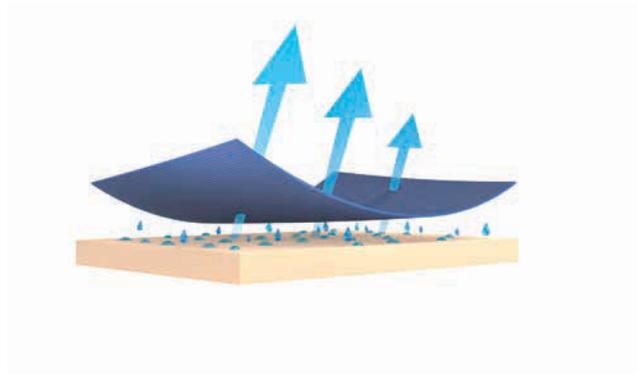


Figure 4. A built-in moisture management system integrates a unique material construction and yarn composition to offer optimal moisture management. High-performance fabrics wick away moisture and keep the skin dry, leaving a comfortable feeling.

and recently launched a range of different panty-styles of the JOBST® Confidence range comprising ergonomic seam placement to better follow the natural body shape and contours (*Figure 5*), and an improved ergonomic construction to reduce discomfort and restriction to reach an even more comfortable and better personalised fit.

In conclusion, patients need to be committed to treating their lipoedema, and be motivated to comply with their treatment regimes. A well-fitting, comfortable compression garment allows patients to live the life they want, without constantly being reminded of their chronic condition. It also helps 'streamline' the limbs, thereby improving cosmesis, and supports better movement which is essential for appropriate management of the condition. **CWC**



Figure 5. The JOBST® Confidence panty range comprises an ergonomic seam placement to better follow the natural body shape and contours and an improved ergonomic construction, designed to reduce discomfort and restriction.

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Case report 1: Lipoedema patient experienced with a circular-knit panty evaluates an innovative flat-knit panty

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This case report describes a 57-year-old woman with lipoedema. Her lipoedema is moderate and comprises a definite body disproportion with a smaller torso, wide hips and columnar legs. The knees are hooded. Typically, her legs are painful. In addition, the patient suffers from anxiety and depression.

The patient has been conscious of her achy legs and their shape since puberty (aged 14 years), but it took 39 years to finally get diagnosed. Previously, she had sought help from her GP on numerous occasions, especially when her legs were getting increasingly uncomfortable, but he suggested her leg pain was because of her job (she is a carer and on her feet much of the day). She was told to elevate the legs and prescribed diuretics (with no success). No further investigations were initiated. After further personal research and information gleaned from the internet, she asked for referral to a lymphoedema clinic and was duly seen at the Kendal Lymphology Centre (KLC) for assessment in 2018, where she was finally given the diagnosis of lipoedema.

After providing a full explanation of her condition, and giving her written information about the same, a supported self-management programme of care was instigated through KLC. She was measured for compression garments to address the pain (and urged to wear them as much as possible on a daily basis), encouraged to eat healthily (not diet), and to exercise regularly. However, the latter was difficult as her work commitments are so great (she works on long, rotating shifts). She does like to walk though, and swim when she can. Although she also has been referred to lipoedema support groups, she has preferred to manage her lipoedema alone.

The patient started compression therapy 3 years ago and has been wearing a compression class (CCL) 2 circular-knitted ready-to-wear panty with closed toes. Her adherence to compression garments has been very good as she wears them 7 days a week for approximately 12 hours each day. The patient said that the compression helps with the pain, and she has been happy to wear circular-knitted garments as they are less expensive (despite getting two pairs every 6 months on prescription, she likes to purchase extra pairs herself for hygiene purposes) and they are aesthetically more pleasing to her. However, she also reported that because of her body shape, the garments have never fitted

well at the waist (too large). They also tend to slip easily and become rather uncomfortable for any length of time, particularly around the knees and ankles where the material tends to 'ruckle'.

For the evaluation period, the patient was prescribed a made-to-measure, CCL 2 JOBST® Confidence panty with a closed toe, slant foot, hallux option and with functional zones for the knees and ankles.

To address the patient's problems and needs, the treatment objective was set:

- To see if a better fitted garment can be achieved
- To have a garment that does not slip from the waist and from the crotch to knee
- To have a garment that is comfortable around the ankle and the knee.

The patient wore the JOBST® Confidence panty for 15 hours every day for 3 weeks and her adherence was very good.

Within the case report period, several parameters to assess the lipoedema were determined and photos were taken (*Table 1* and *Figures 1–2*). Both, the waist-to-hip ratio (WHR) and the body mass index (BMI), had slightly reduced at the end, mainly because her activity levels had increased during the study. The skin condition was normal, whereas the skin consistency was soft during the whole-observation period. Using a visual analogue scale to rate the pain with numbers from 1 (no pain) to 10 (unbearable pain), it had reduced from 5–6 at the start to a 4–5 at the end. The patient's quality of life, including psychological aspects, have not changed over the course of the case report period.

In conclusion, all the treatment objectives were achieved:

- The patient received a garment which fitted better
- The patient received a garment that did not slip from the waist and from the crotch to knee
- The patient received a garment that was comfortable around the ankle and the knee.

To gain further insight on how the patient perceived the new JOBST® Confidence product, she was asked to evaluate different product characteristics (*Table 2*).

At the end of the case report period, the patient's evaluation of the product in regards to the different parameters, such as product application, comfort, fit, performance during activities, and lipoedema management, was generally very positive. She commented that the panty was extremely helpful in enabling her to get through a working day in much more comfort. She

Table 1. Lipoedema assessment

Appointment date	1 February 2022 (start of case report period)	21 February 2022 (end of case report period)
WHR (waist/hip in cm/cm)	91cm/114cm = 0.80	90cm/114cm = 0.79
BMI (weight/height, kg/m ²)	88kg/1.67m ² = 31.55 (obese)	86kg/1.67m ² = 30.84 (obese)
Skin consistency	Soft	Soft
Skin condition	Normal	Normal
Pain (severity according to a numeric VAS with the numbers 1 (no pain) to 10 (unbearable pain))	Often 5–6, never below 3. The discomfort varies and is worse after working. It is a deep aching and throbbing discomfort and irritable/restless at night, too. The patient has tried analgesics, but nothing has really helped.	4–5 when wearing the JOBST® Confidence panty. No other change to responses at the start.
Quality of life	She tries to ignore her lipoedema, but the discomfort is ever present and she hates the way her legs look. She says this affects her self-confidence. She blames it for ending her marriage as she has always felt unattractive and thinks that this has prevented her having a meaningful relationship with anyone else. She never wears anything that is likely to accentuate her legs and always covers them, even when on the beach. When swimming she is conscious of getting in/out of the pool and waits until there are fewer people around before exposing her legs. Her towel is always positioned by the pool edge so she can cover up directly when she gets out and she wears skirts and dresses to hide them (never trousers).	The patient said that the JOBST® Confidence panty made a difference to her quality of life and explained that the most important part was that it stayed in place. She did not have to keep pulling it up (which is very frustrating), and her discomfort was much improved, too.
Psychological aspects	Since puberty the patient is anxious, depressed, and frustrated. She always felt different from the others, and this has influenced her psychologically. She has a very low self-esteem and although she has felt better since her diagnosis (knowing it is not her fault, and that there are others who are in the same boat), she remains frustrated that her condition will never change and finds it depressing.	No change to responses at the start.
WHR=waist-to-hip ratio, BMI=body mass index, VAS=visual analogue scale		

**Figure 1. Extremity at the start.****Figure 2. Extremity with JOBST® Confidence *in situ* at the start.**

Table 2. Evaluation of the JOBST® Confidence product by the patient at the end of the case report period

Question	Rating/answer	Options
How easy was it to apply JOBST® Confidence?	Easy	Very easy, easy, difficult, very difficult
Did you experience any increased pain/discomfort when donning or doffing JOBST® Confidence?	No	Yes/no
How was the overall wearing comfort of JOBST® Confidence?	Very comfortable	Very comfortable, comfortable, acceptable, uncomfortable
How satisfied were you with the overall fit of JOBST® Confidence?	Very satisfied	Very satisfied, satisfied, acceptable, not satisfied
How well did JOBST® Confidence remain in place during your daily activities?	Very good	
How well did JOBST® Confidence allow you to take part in any exercise e. g., walking, cycling, yoga, other sports?	Very good	Very good, good, acceptable, poor
How did you rate JOBST® Confidence's breathability in terms of managing heat build-up and sweating?	Good	
How well did JOBST® Confidence help manage your lipoedema?	a) Overall	Good
	b) Soft tissue pain	Very good
	c) Body shape	Very good
	d) Mobility/range of movement/limb function	Very good
How would you rate your overall satisfaction with JOBST® Confidence?	Satisfied	Very satisfied, satisfied, acceptable, not satisfied

felt comfortable enough to keep them on even doing a split shift. The patient also thought that the panty helped her shape look better as it 'streamlined' her legs and hips/abdomen much more efficiently. She felt that she walked better too and the legs were less restless in the evening.

Overall, the patient was 'satisfied' with the product. When asked about the biggest benefits of JOBST® Confidence, she replied that it is the streamlined support of the legs, the fit on the body—brilliant around the waist and hips which are normally such a problem—and no slippage in any part of the garment. **CWC**

Case report 2: Active lipoedema patient committed to improve her condition with an innovative flat-knit garment

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This case report describes a 34-year-old woman with lipoedema. Her lipoedema is mild and comprises a usual shape disproportion with a narrow waist and larger hips. She has hooded knees. Typically, her tissues are painful—especially in the thighs. Apart from this, she is a very fit and active person.

Her lipoedema was diagnosed at the Kendal Lymphology Centre (KLC) in August 2021. She had seen a TV programme where a woman shared her story about her lipoedema and she recognised that this woman had exactly the same body shape as her own.

Following discussion/reflection about family and clinical history at her assessment appointment, the patient realised that she had lipoedema since her school years beginning approximately with the onset of puberty at the age of 13 when her legs became achy and looked different to the ones of other girls. It also appears that lipoedema runs in her family as her mother and grandmother have a similar body shape. Knowing that the condition can be much worse, she is committed to improve her lipoedema as much as she can. To achieve this, she has taken on board the holistic elements of care outlined by the assessment team at the KLC: she eats healthy, exercises regularly and wears compression garments on a daily basis to help with the pain. Furthermore, she has joined support groups, informs herself about other treatment possibilities (including surgery) and has even paid to attend a conference to learn more about her condition.

The patient started compression therapy 4 months ago, but as the garments prescribed were incorrectly dispensed by the pharmacy, she has not yet had great experience with any compression garments. She was very frustrated that she could not wear them all day in order to optimally manage her lipoedema. However, even though the previous compression garments were not a good fit (and therefore not comfortable), she did persevere with them as she realised that they did help somewhat with the pain and therefore found them better than nothing at all.

For the evaluation period, the patient was prescribed a made-to-measure, compression class 1 JOBST® Confidence panty with an open toe and functional zones for the knees and ankles.

To address the patient's problems and needs, the treatment objective was set:

- To obtain a garment that she wears during waking hours
- To obtain a garment that reduces her pain
- To obtain a garment that supports her legs (e.g. to stop them 'wobbling').

The patient wore the JOBST® Confidence panty for over 12 hours every day for 3 weeks and her adherence was very good.

Within the case report period, several parameters to assess the lipoedema were determined and photos were taken (see *Table 1* and *Figures 1-2*). As expected, the waist-to-hip ratio (WHR) remained unchanged at the end. But her body mass index (BMI) slightly reduced (mainly because she felt she was much more active while wearing her panty as her legs were much more comfortable). The skin condition was normal, and the skin consistency was soft in the thighs at the start. Both did not change throughout the case report period. By using a visual analogue scale with the numbers ranging from 1 (no pain) to 10 (unbearable pain), the pain was rated at assessment. It had greatly reduced from a 6 at the start to a 3–4 at the end. In line with this, the intake of analgesics has significantly reduced from a use of between two to three paracetamol per day to only two paracetamol during the whole case report period. This is a great improvement as the patient reported to be afraid that the regular use of analgesics might negatively affect her body. The patient's quality of life, including psychological aspects, have not changed over the course of the case report period, with the exception of her self-confidence, which has improved somewhat as her legs feel better and have more support since using the garment.

In conclusion, all the treatment objectives were achieved:

- The patient wore the garment all day with no ill effects at all
- The patient felt that her pain was much better by wearing the garment
- The patient's legs were much better supported.

To gain further insight on how the patient perceived the new product, she was asked to evaluate different product characteristics (*Table 2*).

At the end of the case report period, the patient's evaluation of the product with regards to the different parameters, such as product application, comfort, fit, performance during activities, and lipoedema management, was very positive. She commented that she did not experience slippage at all and that the garments were great during her recent snowboard trip (*Figure 3*) as she

Table 1. Lipoedema assessment

Appointment date	11 February 2022 (start of case report period)	4 March 2022 (end of case report period)
WHR (waist/hip in cm/cm)	83cm/100cm = 0.83	83cm/100cm = 0.83
BMI (weight/height in kg/m ²)	65kg/1.55m ² = 27.06 (overweight)	63kg/1.55m ² = 26.2 (overweight)
Skin consistency	Soft in the thighs	Soft in the thighs
Skin condition	Normal	Normal
Pain (severity according to a numeric VAS with the numbers 1 (no pain) to 10 (unbearable pain))	6 (at least). The pain is a constant dull ache in the legs which is always worse at night when the patient is not as active. Legs are not particularly tender but constantly uncomfortable. Nothing tends to ease it at all, not even analgesia: she takes regular paracetamol and ibuprofen, but it does not seem to make much difference.	3–4. Pain is a dull ache but has been much better since wearing the panty. In addition, she has only had to take two paracetamol compared to taking two to three tablets per day before. She has slept better as her legs are not as restless or achy at night.
Quality of life	The patient is extremely aware of her condition/appearance and hates it. However, she is relatively confident and in a loving relationship, so her condition does not affect their intimacy, nor does it stop her from living an active life. Nevertheless, she is always conscious of the pain (general aching) and her large thighs rub together leading her to worry that this might affect her mobility/posture and gait in the future.	Same responses as at start of study, but the patient has found wearing the garments has given her more self-confidence in some ways because her legs feel better and more supported.
Psychological aspects	The patient is frustrated by her condition but tries not to let the condition upset her as much as possible. She always knew she had something 'wrong' with her legs and feels better now that she has been given a diagnosis. She is optimistic, seems quite confident and is an extrovert but still hates her body shape and would love to have slim legs.	No change to responses at the start.

WHR=waist-to-hip ratio, BMI=body mass index, VAS=visual analogue scale

**Figure 1. Extremity at the start.****Figure 2. Extremity with JOBST® Confidence *in situ* at the start.**

was able to twist and turn easily while the garments stayed perfectly in place. Furthermore, she added that the garment felt like a second skin: 'you do not really know they are on, so they helped with everyday activities of living'. They were so supportive which really helped, and they were amazing when snowboarding as they did not interfere with her movement at all.

Overall, the patient was 'very satisfied' with the product and when asked about the biggest benefits of JOBST® Confidence, she replied that it is the comfort, the pain reduction and the streamlined effect. When asked about her experience whilst wearing the garment, she said that she absolutely loved it as it ticks most of the boxes and is supportive and comfortable, particularly around the thighs and ankles which are the parts she hated the most of having lipoedema. **CWC**



Figure 3. Patient on her snowboarding trip with JOBST® Confidence *in situ* during the case report period.

Table 2. Evaluation of the JOBST® Confidence product by the patient at the end of the case report period

Question	Rating/answer	Options
How easy was it to apply JOBST® Confidence?	Very easy	Very easy, easy, difficult, very difficult
Did you experience any increased pain/discomfort when donning or doffing JOBST® Confidence?	No	Yes/no
How was the overall wearing comfort of JOBST® Confidence?	Very comfortable	Very comfortable, comfortable, acceptable, uncomfortable
How satisfied were you with the overall fit of JOBST® Confidence?	Very satisfied	Very satisfied, satisfied, acceptable, not satisfied
How well did JOBST® Confidence remain in place during your daily activities?	Very good	
How well did JOBST® Confidence allow you to take part in any exercise e. g. walking, cycling, yoga and other sports?	Very good	Very good, good, acceptable, poor
How did you rate JOBST® Confidence's breathability in terms of managing heat build-up and sweating?	Good	
How well did JOBST® Confidence help manage your lipoedema?	a) Overall	Very good
	b) Soft tissue pain	Very good
	c) Body shape	Very good
	d) Mobility/range of movement/limb function	Very good
How would you rate your overall satisfaction with JOBST® Confidence?	Very satisfied	Very satisfied, satisfied, acceptable, not satisfied

Case report 3: Lipoedema patient experienced with compression therapy evaluates an innovative flat-knit garment

Justine Whitaker

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This case report describes a 36-year-old woman with lipoedema. Her lipoedema is moderate. Her thighs are disproportionately larger than would be expected in relation to her upper body size. Typically, her legs are painful, especially upon touch. Furthermore, the patient suffers from anxiety and body dysmorphia.

Her lipoedema was diagnosed by her family doctor after requesting a lymphangiogram to rule out lymphoedema. Following this diagnosis, she was referred to a lymphoedema clinic in 2010. In 2014, the patient underwent bilateral full leg liposuction with good results regarding size and shape. However, after having gained weight during her second pregnancy, the legs look now the same as before liposuction. Last year (2021) her legs used to rub together. She feels embarrassed by her body shape, so she is actively losing weight and exercising which is improving her symptoms.

The patient started compression therapy 8 years ago. She is currently wearing a flat-knit compression class (CCL) 2 panty for 6–7 days per week for 10 hours per day. Even though her adherence is good she is not entirely convinced by her compression garments as she finds them uncomfortable and complains that they slip down and dig in. They do not always fit properly. They nip behind the knee and the open toe slips a lot, leaving her toes feel cold and swollen.

For the evaluation period, the patient was prescribed a made-to-measure, CCL 2 JOBST® Confidence panty with an open toe.

To address the patient's problems and needs, the treatment objective was set:

- To feel comfortable
- To extend wear time
- To obtain a garment that the patient feels is helping with her lipoedema.

The patient wore the JOBST® Confidence panty for 12–14 hours every day for 4 weeks and her adherence was very good.

Within the case report period, several parameters to assess the lipoedema were determined and photos were taken (see *Table 1* and *Figures 1–4*). The waist-to-hip ratio (WHR) slightly increased at

Table 1. Lipoedema assessment

Appointment date	11 February 2022 (start of case report period)	4 March 2022 (end of case report period)
WHR (waist/hip in cm/cm)	75cm/112cm = 0.67	74cm/109cm = 0.68
BMI (weight/height in kg/m ²)	80kg/1,69m ² = 28 (overweight)	79.1kg/1,69m ² = 27.7 (overweight)
Skin consistency	Soft in the thighs	Soft in the thighs
Skin condition	Normal	Normal
Pain (severity according to a numeric VAS with the numbers 1 (no pain) to 10 (unbearable pain))	2 on a good day. 4 on a bad day. 8-9 when her children climb on her. The pain is very strong when touched. Com-pression eases it a bit.	1 generally. 8 when stimulated, e. g. when her children climb on her.
Quality of life	The patient thinks about her lipoedema every day and often, but it does not stop her from doing things. Quite accepting of her lipoedema diagnosis but does have bad days too where she struggles with it.	No change to responses at the start.
Psychological aspects	The patient has anxiety, but says it is not related to the lipoedema. Acknowledges body dysmorphia.	No change to responses at the start.
WHR=waist-to-hip ratio, BMI=body mass index, VAS=visual analogue scale		



Figure 1. Extremity at the start (front view).



Figure 3. Extremity with JOBST® Confidence *in situ* (front view).



Figure 3. Extremity at the start (back view).

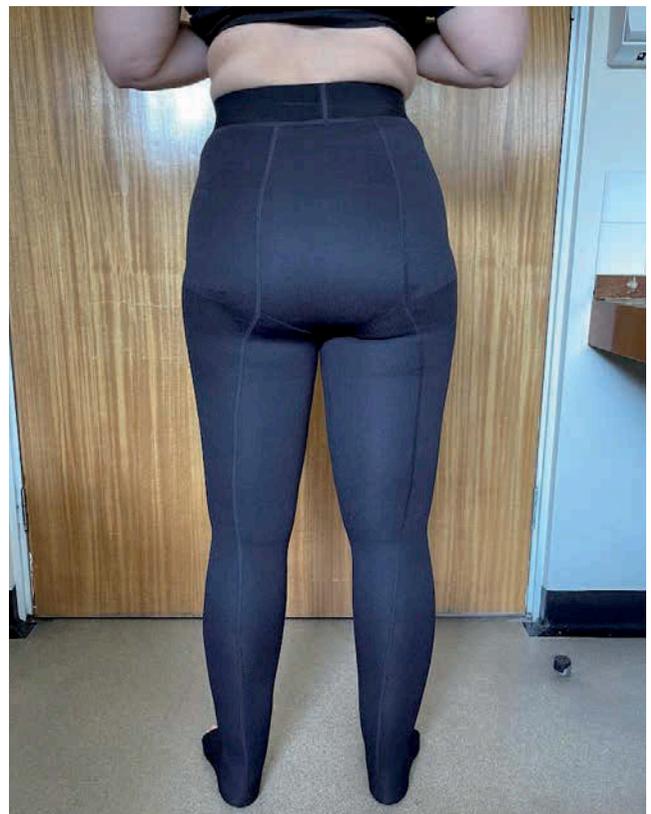


Figure 4. Extremity with JOBST® Confidence *in situ* (back view).

the end, whereas the body mass index (BMI) slightly reduced, consistent with the patient's active weight loss and exercise. Both the skin condition and the skin consistency were normal and remained unchanged during the whole observation period. Rated by using a visual analogue scale from 1 (no pain) to 10 (unbearable pain), the pain had significantly reduced from a 2 (on good days) to 4 (on bad days) at the start, to a stable 1 at the end. The patient's quality of life including psychological aspects did not change over the course of the case report period.

In conclusion, all the treatment objectives were achieved:

- The patient felt comfortable in the panty
- The wear time was extended to 2–4 hours per day

- The patient obtained a garment that she felt is helping with her lipoedema.

To gain further insight on how the patient perceived the new JOBST® Confidence product, she was asked to evaluate different product characteristics (*Table 2*).

At the end of the case report period, the patient's evaluation of the product with regards to the different parameters, such as product application, comfort, fit, performance during activities, and lipoedema management, was generally very positive.

Overall, the patient was 'very satisfied' with the product and when asked about the biggest benefits of the garment, she replied that the soft garment made moving around easier. **CWC**

Table 2. Evaluation of the JOBST® Confidence product by the patient at the end of the case report period

Question	Rating/answer	Options
How easy was it to apply JOBST® Confidence?	Easy	Very easy, easy, difficult, very difficult
Did you experience any increased pain/discomfort when donning or doffing JOBST® Confidence?	No	Yes/no
How was the overall wearing comfort of JOBST® Confidence?	Comfortable	Very comfortable, comfortable, acceptable, uncomfortable
How satisfied were you with the overall fit of JOBST® Confidence?	Very satisfied	Very satisfied, satisfied, acceptable, not satisfied
How well did JOBST® Confidence remain in place during your daily activities?	Very good	
How well did JOBST® Confidence allow you to take part in any exercise e. g., walking, cycling, yoga, other sports?	Very good	Very good, good, acceptable, poor
How did you rate JOBST® Confidence's breathability in terms of managing heat build-up and sweating?	Very good	
How well did JOBST® Confidence help manage your lipoedema?	a) Overall	Very good, good, acceptable, poor
	b) Soft tissue pain	
	c) Body shape	
	d) Mobility/range of movement/ limb function	
How would you rate your overall satisfaction with JOBST® Confidence?	Very satisfied	Very satisfied, satisfied, acceptable, not satisfied