

# **The Positive Effect of a New Compression Garment on Continence in Women**

## **Authors**

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## Introduction

Compression garments are an established adjunctive therapeutic modality used in medicine and surgery and to improve sports performance and recovery. Considerable research has demonstrated the benefits of compression garments for conditions including wound management and oedema, but little research has investigated their use in women with urinary incontinence and pelvic floor disorders.

Pelvic floor exercise, which improves the tone and function of the pelvic floor muscles have been typically used as an inexpensive treatment for women with stress urinary incontinence (UI) (Sangsawang and Serisathien, 2012). A recent study (Okayama et al., 2019) determined that wearing supportive underwear (shaper) was nearly as effective in decreasing UI symptoms as pelvic floor muscle training. Using a shaper was also shown to be effective in elevating the bladder neck and reducing symptoms of stress UI (Ninomiya et al., 2014).

As part of an ongoing research and development program, SRC Health conducted a survey of users of SRC Restore mini shorts (a new continence garment) with the aims of: providing information about the comfort of this new continence garment and investigating whether the new garment helps to improve continence and quality of life (QOL) in participants.

## Methods

### *Participants and surveys*

An online pre-qualification survey was used to select participants for the continence research program (Table 1). Participants were invited to complete a SurveyMonkey survey posted on social media (Facebook). 195 people agreed to participate in the online pre-qualification survey.

People were included if they fulfilled the following criteria: they were aged between 45 and 60; they had urine leakage more than once per week but not all the time; the quantity of urine lost was small (equivalent to a 20 cent piece) or moderate (equivalent to a 50 cent piece); they had a Urinary Incontinence Questionnaire (UIQ) score of less than 60; and on a scale of 0–10, the subjective interference (how much incontinence interfered in their life) was less than eight.

The participants were then invited to complete two other surveys: one about the comfort and compression adequacy of the SRC Restore mini-shorts continence garment (Table 2) and one to assess the urinary function of participants (Table 3).

The surveys were carried out between June and October 2019. All data was de-identified.

### *Garment comfort and compression survey*

Women were asked to respond to questions about the comfort of the garment and to comment on whether the garment provided adequate compression (Table 2). The women assessed the comfort of the garment using a five-point comfort scale (not very comfortable, slightly comfortable, moderately comfortable, very comfortable and extremely comfortable).

All (100%) of the respondents reported that wearing the garments made it easier for them to perform daily activities. All (100%) of the respondents stated they would recommend the garments to others.

### *Urinary Incontinence Questionnaire (UIQ)*

The UIQ, a subset of the Pelvic Floor Impact Questionnaire – short form 7 (PFIQ-7) (Szkwaro et al., 2019) was used to assess the urinary function of women with pelvic floor disorders. The UIQ consists of one scale with seven questions. The scale is scored from 0 (least impact) to 100 (greatest impact).

To determine a baseline level of continence, UIQ scores were collected for three weeks. Data were also collected for a further six weeks when the women were wearing the compression garment. The data was averaged for the baseline and garment-wearing stages. The UIQ comparison value (average garment phase UIQ – average baseline UIQ) was used to determine the UIQ improvement after using the garment.

There were 43 responses to the survey, however, some women responded multiple times. In these cases, the responses were averaged, and this was considered a single response. In total there were 34 unique responses.

Some participants did not complete the survey for the full trial period. To compensate for these participants, only those who completed at least 2/3 of the responses in both the baseline and garment-wearing phases were included in the final analysis. The final data set included 20 participants (Table 4).

### *Statistical analysis*

A one-sided t-test was used to determine the statistical significance of data obtained when determining if there was an improvement in UIQ score after garment use. It was also used to determine if continence had a lower impact on a women's life after they wore the garment.

Regression statistics and ANOVA were used to determine if there was a statistically significant improvement in continence with prolonged use of the garment.

## Results

### *Garment comfort and compression adequacy*

12.5% of women found the garment extremely comfortable, 21.7% very comfortable and 35.8% moderately comfortable (Figure 1). A small percentage (4.2%) reported that the garment was slightly comfortable, while 13.3% reported that the garment was not very comfortable. No responses were received from 12.5% of the women surveyed.

On a five-point scale, the average comfort score was 3.18. In other words, on average, people found the garment to be moderately comfortable.

In terms of support/compression, 83.33% of women reported that the garment provided adequate support/compression.

### *Improvement in UIQ scores*

70% of respondents showed a statistically significant ( $p < 0.05$ ) improvement in their UIQ score. The mean baseline UIQ was 41.23, while it was 36.80 after garment use. This result was a statistically significant ( $p < 0.05$ ) improvement of 4.43.

Although there was a definitive improvement in continence when UIQ values from the garment phase were compared to baseline UIQ values, regression analysis showed that there was no statistically significant ongoing improvement in continence with prolonged garment use. (Figure 2).

### *Improvement in quality of life (QOL)*

Participants were asked to rate the level that incontinence interfered with their QOL before and after using the garment using a scale between 0 and 100, with 100 being maximum impact on QOL (Figure 3). Continence had a lower impact on the lives of participants when they used the garment (mean score 29.47) compared to when they were not using the garment (mean score 45.18). The mean decrease of 17.10 was statistically significant ( $p < 0.05$ ).

## Discussion

Overall, our data showed that use of the garment improved continence. The garment had a positive impact on continence while worn. Further study would be needed to determine whether UIQ would be sustained or returned to baseline levels without being worn.

Use of the garment also helped to make the participants feel better about their condition and their everyday QOL was improved. The participants largely found the garment comfortable and reported that it provided adequate support. There was a high rate of satisfaction with the garment and 100% of participants stated they would recommend the garment to others.

Overall, the compression garment can be viewed as a complementary, non-invasive addition in the arsenal of women who are dealing with UI.

13.3% of women who reported the garment as 'not comfortable' had sizing issues that have since been resolved.

This study did not show any important correlations between improvement in continence and variables such as physical activity or the duration the garment is worn each day. Further research is required with a larger sample group to determine if there is a definitive improvement in continence, especially in the areas of physical activity and level of use.

## Acknowledgements

Drs Julie Milland and Vicky Vallas of ScribblersInc provided editorial assistance in the preparation of this report.

## References

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**Table 1: Pre-qualification survey**

1. What is your contact information?
2. How old are you?
3. Have you had any treatment for incontinence?
4. When was the treatment?
5. What was the treatment?
6. How many children do you have?
7. How old is the youngest child?
8. How often do you leak urine?
9. How much urine do you usually leak (whether you wear protection or not)?
10. When do you experience leakage?
11. How does incontinence usually affect your – ability to do household chores; ability to do physical activities; participation in entertainment activities; ability to travel by car or bus for a distance greater than 30 minutes away; participation in social activities outside your home; emotional health; level of frustration?
12. On a scale of 0–10, how much does your incontinence interfere with your everyday life (0 = not at all, 10 = a great deal)?

**Table 2: Garment comfort and compression survey.**

1. During the last week have you had any treatment(s) to help with your condition [please choose from the list]?
2. What was the amount of your physical activity during the week?
3. What type of physical activity did you engage in?
4. How comfortable was this garment to wear?
5. Do you feel that there is adequate support/compression in this garment?
6. How many hours per day did you wear this garment?
7. How does incontinence usually affect your – ability to do household chores; ability to do physical activities; participation in entertainment activities; ability to travel by car or bus for a distance greater than 30 minutes away; participation in social activities outside your home; emotional health; level of frustration?
8. On a scale of 0–10, how much does your incontinence interfere with your everyday life this week (0 = not at all, 10 = a great deal)?
9. How likely is it that you would recommend the SRC Restore Compression Product to a friend or colleague (scale: 0–10; 0 = not at all likely, 10 = extremely likely)?
10. Do you have any other comments, questions, or concerns?

**Table 3: Urinary Incontinence Questionnaire**

1. How does incontinence usually affect your ability to do household chores (cooking, laundry, housecleaning) [not at all; somewhat; moderately; quite a bit]?
2. How does incontinence usually affect your ability to do physical activities such as walking, swimming, or other exercise [scale: not at all; somewhat; moderately; quite a bit]?
3. How does incontinence usually affect your entertainment activities such as going to a movie or a concert [scale: not at all; somewhat; moderately; quite a bit]?
4. How does incontinence usually affect your ability to travel by car or bus for a distance greater than 30 minutes away [scale: not at all; somewhat; moderately; quite a bit]?
5. How does incontinence usually affect your participation in social activities outside your home [scale: not at all; somewhat; moderately; quite a bit]?
6. How does incontinence usually affect your emotional health (nervousness, depression etc) [scale: not at all; somewhat; moderately; quite a bit]?
7. How does incontinence usually affect your level of frustration [scale: not at all; somewhat; moderately; quite a bit]?

**Table 4: Participant characteristics**

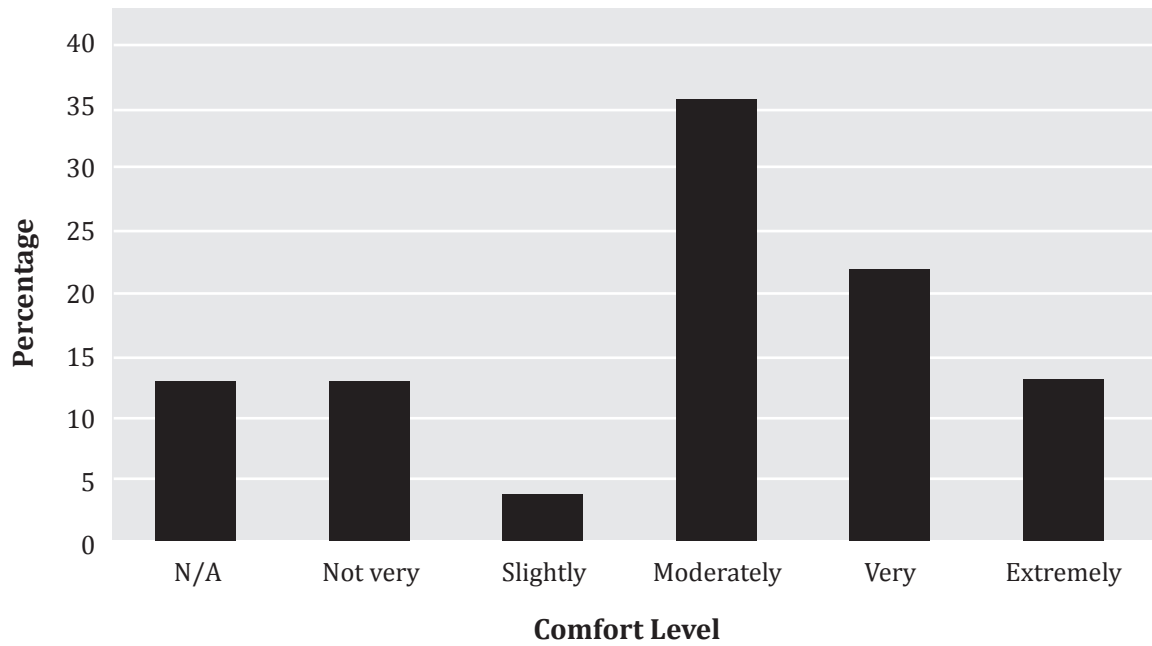
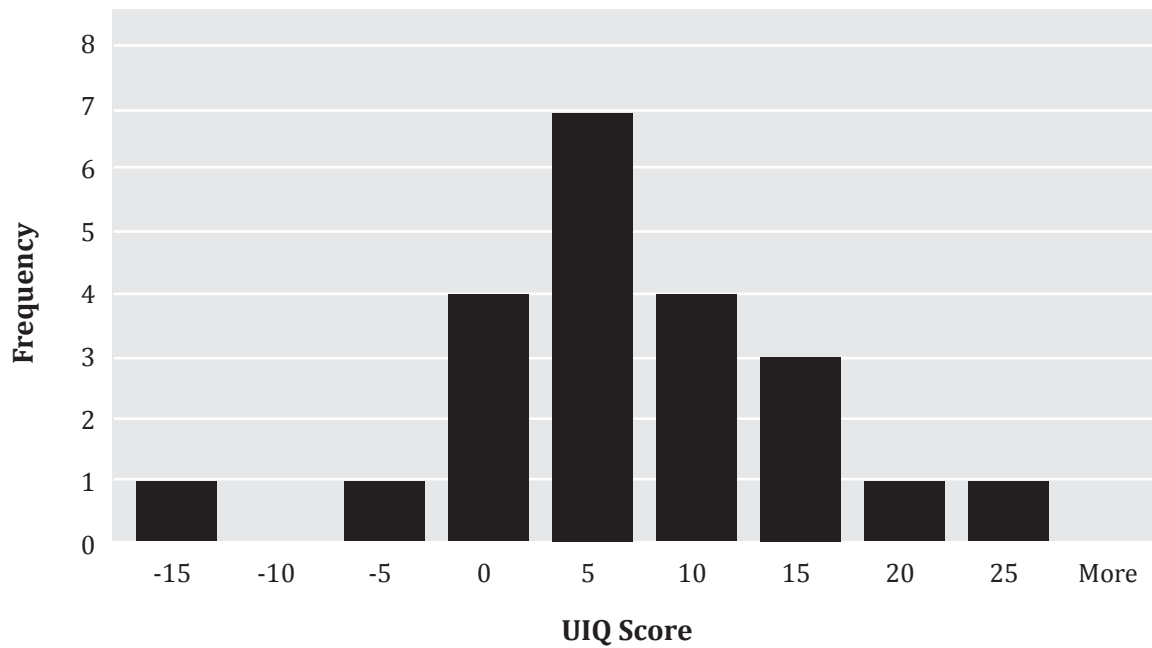
Characteristics	n
<b>Age (years)</b>	
45–54	8
55–64	11
65+	1
<b>Number of children*</b>	
0	2
1	3
2	7
3	5
4	2
<b>Continence treatment</b>	
No treatment	17
Treatment**	3
<b>Frequency of leakage</b>	
2–3 occasions/week	6
1 occasion/day	6
>1 occasion/day	8

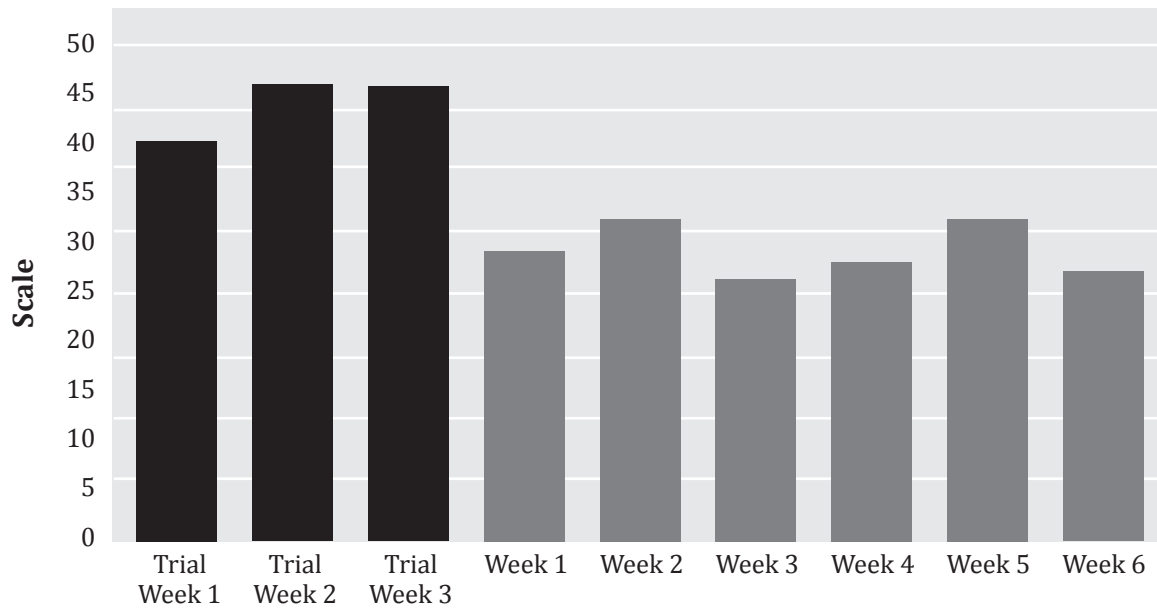
Characteristics	n
<b>When does leakage occur***</b>	
Before reaching the toilet	10
When coughing or sneezing	15
When asleep	2
During physical activity	15
Post urination while getting dressed	10
No obvious reason	6
<b>Geographic location</b>	
New South Wales	7
Victoria	5
Queensland	1
South Australia	2
Western Australia	3
Tasmania	2
Northern Territory	0

\* One participant did not answer this question.

\*\* Treatments included sling, pelvic floor exercises and bladder repair operation.

\*\*\* Some participants provided multiple answers to this question.

**Figure 1: Comfort level of the compression garment****Figure 2: Improvements in UIQ scores after garment use**

**Figure 3: Effect of continence on quality of life**

Note: Participants were asked to provide a score on a scale range of between 0 and 100.

