

Abstract

Background: Since the launch of Your[®] Liner, MotionTech is collecting feedback from CPOs on the performance of the liners and their satisfaction with the service. The present document presents the overall data collected since the launch of Your[®] Liner.

Objectives: To analyse the reported performance of the Your[®] Liner products and of the service provided by MotionTech, both in a non-comparative and comparative manner.

Study design: Retrospective analysis of continuously collected data through a satisfaction survey integrated in the product lifecycle.

Methods: A custom online survey was developed to solicit feedbacks from CPOs about a given liner, when they order a renewal liner for the same patient. Two sets of grades were to be attributed to various performance criteria: the first set as a performance assessment of Your[®] Liner without comparator (non-comparative), the second set as an assessment of how Your[®] Liner impacted various performance criteria, compared to the liner the patient was using before.

Results: All available data was included. For the non-comparative assessment, this consisted in 59 fittings. For the comparative assessment, this consisted in 47 fittings.

On the non-comparative study, all performance criteria were given a grade higher than 4 out of 5, with Textile aesthetics getting the lowest grade (4.1) and Service & support from MotionTech getting the highest one (4.9).

On the comparative study, all performance criteria displayed a superior performance than the comparator, with Sweating getting the lowest grade (+0.3 on a scale from -2 to +2), and Overall satisfaction getting the highest grade (+1.8 on a scale from -2 to +2).

Conclusion: Overall, both non-comparative and comparative questionnaires provided above-average results on almost all of the considered prosthetic performance criteria.

In the non-comparative analysis, the service provided by MotionTech particularly stood out, as well as the fit and the thickness profile of the liner. In view of Your[®] Liner's key features (based on 3D scan, and possibility to control the local thicknesses), this seems to indicate that Your[®] Liner is delivering very well on what CPOs are expecting.

In the comparative analysis, if Complaints on painful area of the stump and Comfort when wearing the liner received very positive reviews, the criteria which received the best grade was the Overall Satisfaction. If we consider that Overall satisfaction should be most important criteria, this provides an outstanding review of what CPOs feel Your[®] Liner can bring for their users.

Background

In June 2021, MotionTech released an online form which CPOs can use to order renewal liners for patients already fitted with a Your® Liner. On this online form, CPOs are offered the possibility of providing a feedback about the liner for which they are placing a renewal order (see <https://motiontech.ch/yourlinerfollowupplatform> to see actual platform).

If they agree to provide a feedback, they are first asked to fill the under non-comparative questions:

"Grade how satisfied your were with the following aspects of Your® Liner"

	Not at all satisfied	Rather not satisfied	Neutral	Rather satisfied	Fully satisfied
Fit of the liner	☐	☐	☐	☐	☐
Thickness profile	☐	☐	☐	☐	☐
Workmanship quality	☐	☐	☐	☐	☐
Textile aesthetics	☐	☐	☐	☐	☐
Feel (texture, touch, material)	☐	☐	☐	☐	☐
Lead time (from order to reception)	☐	☐	☐	☐	☐
Service & support from MotionTech	☐	☐	☐	☐	☐

Then, if they indicate that the patient in question was using a liner from another manufacturer prior to being fitted with the Your® Liner, they are asked to fill the under comparative questions:

"How did Your® Liner impact the following aspects compared to when your patient was using his previous liner"

	Much worse	A bit worse	Similar	A bit better	Much better	I don't know
Overall satisfaction	☐	☐	☐	☐	☐	☐
Complaints on painful areas of the stump	☐	☐	☐	☐	☐	☐
Overall mobility abilities	☐	☐	☐	☐	☐	☐
Occurence of skin injuries	☐	☐	☐	☐	☐	☐
Occurence of injuries preventing use of the prosthesis until healed	☐	☐	☐	☐	☐	☐
Comfort when wearing the liner	☐	☐	☐	☐	☐	☐
Proprioception	☐	☐	☐	☐	☐	☐
Daily limb volume change	☐	☐	☐	☐	☐	☐
Sweating	☐	☐	☐	☐	☐	☐
Donning & doffing	☐	☐	☐	☐	☐	☐

The above questionnaire was custom-built by MotionTech. The questionnaire was developed by prioritising the following considerations:

- The questionnaire needed be quick to fill. CPOs providing the feedback were not part of a controlled trial, and were taking on their personal time to provide the answers. A lengthy questionnaire validated for clinical assessment was therefore deemed inadequate.
- We wanted to focus primarily on aspects of prosthetic performance directly related to the liner. Some aspects often studied in prosthetic evaluation questionnaire were deemed to be unlikely to be impacted by the liner, and therefore were not included in the present questionnaire
- The basis used to select the evaluation criteria was the Prosthetic Evaluation Questionnaire, which was trimmed down to the minimum to keep, according to the authors of the present study, the most important criteria prone to being influenced by a liner.

In February 2023, after around 20 months of this system being live, 59 feedbacks were collected. The data was pulled to conduct a first analysis.

Method

The data was pulled from the platform for analysis. Out of the 59 received feedbacks, all were included for analysis. **Not a single feedback was excluded.**

For the non-comparative analysis, a scale of 1 to 5 was used to calculate an average and median score, as well as standard deviation:

Not at all satisfied	Rather not satisfied	Neutral	Rather satisfied	Fully satisfied
1	2	3	4	5

For the comparative analysis, a scale of -2 to 2 was used to calculate an average and median score, as well as standard deviation:

Much worse	A bit worse	Similar	A bit better	Much better
-2	-1	0	1	2

Results

Non comparative analysis

All 59 received feedbacks were included in the analysis. One feedback did not provide an answer to three of the performance criteria. All 58 other provided an answer to all performance criteria.

Grade how satisfied your were with the following aspects of Your® Liner	Not at all satisfied	Rather not satisfied	Neutral	Rather satisfied	Fully satisfied	Average grade	Median	Std. Dev.	# of data points
	1	2	3	4	5				
Fit of the liner	0	1	0	14	44	4.7	5	0.6	59
Thickness profile	0	1	2	17	38	4.6	5	0.6	58
Workmanship quality	0	0	5	27	26	4.4	4	0.6	58
Textile aesthetics	0	3	11	20	25	4.1	4	0.9	59
Feel (texture, touch, material)	1	0	8	21	29	4.3	4	0.8	59
Lead time (from order to reception)	0	1	4	19	34	4.5	5	0.7	58
Service & support from MotionTech	0	0	0	8	51	4.9	5	0.3	59

The performance criteria **Fit of the liner**, **Thickness profile**, **Lead time** and **Service & support from MotionTech** received outstanding grades:

- Average grade above 4.5 / 5,

- Median at 5 / 5
- Rather low standard deviation (between 0.3 and 0.7)

The performance criteria **Workmanship quality**, **Textile aesthetics** and **Feel (texture, touch material)** also received very good grades:

- Average grade above 4 / 5,
- Median at 4 / 5
- Rather low standard deviation (between 0.6 and 0.9)

Comparative analysis

Out of the 59 feedbacks received, 12 indicated that the patient didn't have a liner before, and therefore didn't provide an answer to the comparative analysis. The "I don't know" answers were excluded from the analysis, only keeping the data points where a grade was provided:

How did Your® Liner impact the following aspects compared to when your patient was using his previous liner	Much worse	A bit worse	Similar	A bit better	Much better	Average grade	Median	Std. Dev.	# of data points
	-2	-1	0	1	2				
Overall satisfaction	0	0	2	6	39	1.8	2	0.5	47
Complaints on painful areas of the stump	0	0	4	11	30	1.6	2	0.7	45
Overall mobility abilities	0	0	12	16	16	1.1	1	0.8	44
Occurrence of skin injuries	0	0	9	12	23	1.3	2	0.8	44
Occurrence of injuries preventing use of the prosthesis until healed	0	1	9	10	17	1.2	1	0.9	37
Comfort when wearing the liner	0	1	4	10	31	1.5	2	0.8	46
Proprioception	0	1	12	10	13	1.0	1	0.9	36
Daily limb volume change	0	0	19	8	6	0.6	0	0.8	33
Sweating	0	2	25	7	3	0.3	0	0.7	37
Donning & doffing	0	9	15	14	7	0.4	0	1.0	45

The performance criteria **Overall satisfaction**, **Complaints on painful areas of the stump**, **Occurrence of skin injuries**, and **Comfort when wearing the liner** received outstanding grades:

- Average grade above 1.3 (on a -2 to 2 scale)
- Median at 2 (maximum grade)
- Rather low standard deviation (between 0.5 and 0.8)

The performance criteria **Overall mobility abilities**, **Occurrence of injuries preventing use of the prosthesis until healed**, and **Proprioception** received outstanding grades:

- Average grade above 1.1 (on a -2 to 2 scale)
- Median at 1 (on a -2 to 2 scale)
- Rather low standard deviation (between 0.8 and 0.9)

The performance criteria **Daily limb volume change**, **Sweating**, and **Donning & doffing** a bit above average grades:

- Average grade above 0.3 (on a -2 to 2 scale)
- Median at 0 (on a -2 to 2 scale)
- Rather low standard deviation (between 0.7 and 1.0)

Study limitations

Biais

To date, the questionnaire is available in four languages (English, German, French and Dutch). Translations and used terms might introduce biais in the data.

The used questionnaire is also not a validated and recognised for evaluating prosthetic performance. The selected questions and their wording might introduce biais in the data.

Furthermore, the data was collected when CPOs were placing a renewal order. Inherently, this means that the fitting was successful for the patient for which they were placing the renewal order. The same questionnaires, if provided to patients for whom the fitting was unsuccessful, would most likely yield substantially different results. This data collection method therefore introduces biais in the collected data. Nonetheless, the fact that CPOs provided a feedback when placing the renewal order also means that patients had enough time to properly assess the mid-term impact that using Your® Liner had for them. As prosthetic performance is a multi-factorial concept, obtaining very positive grades on the "Overall satisfaction" criteria still seems to provide relevant insights on the overall perception that users have when wearing a Your® Liner.

Besides, the data was provided by CPOs and not by the prosthetic users themselves. The CPO's assessment of the various prosthetic performance criteria might therefore be different than what users would have provided..

Data significance

With 59 feedbacks, the non-comparative analysis can be deemed to provide a decent dataset.

The comparative analysis, however, is based on a smaller dataset. Furthermore, given the diversity of liner types and models which the various users might have used before, it is likely that individual comparators could yield very variable results. Analysis conducted on larger datasets, and separating the analyses based on different comparators (e.g. material in which the previous liner was made, was the previous liner custom-made or off-the-shelf) might also provide further insights.

Conclusion

The present study focused on analysing the available data provided by CPOs during their normal use of Your® Liner.

Overall, both non-comparative and comparative questionnaires provided above-average results on almost all of the considered prosthetic performance criteria.

In the non-comparative analysis, the service provided by MotionTech particularly stood out, as well as the fit and the thickness profile of the liner. In view of Your® Liner's key features (based on 3D scan, and possibility to control the local thicknesses), this seems to indicate that Your® Liner is delivering very well on what CPOs are expecting.

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Declaration of conflict of interest

The present study report was compiled by Clément Gabry, who is a shareholder and employee of MotionTech, the company manufacturing Your® Liner.