

Investigation into the Effects of SORxSOAP in the Job-Related Performance of Deli Meat Slicers over a One-Month Period

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Abstract

Instrument-assisted soft tissue mobilization is well researched and widely accepted to improve circulation, decrease pain, improve function, increase strength, and promote overall soft tissue health. However, the administration of this intervention, in most cases, is limited to the brief amounts of time we spend mobilizing our soft tissue. SORxSOAP offers a pragmatic strategy by which one may mobilize their soft tissue while simultaneously showering or washing a specific part of their body. The purpose of this study is to demonstrate the effects SORxSOAP has on functional measures of upper extremity activity in the slicing hands of employees at a corporate deli franchise over the course of a one-month period. 31 employees of a corporate deli franchise were asked to participate in a study involving the use of SORxSOAP. The subjects were assigned to experimental and control groups through random sampling. Twenty-one subjects in the experimental group were given a one month's supply of SORxSOAP to use on a regular basis while showering. Ten subjects in the control group were not exposed to any independent variable. The subjects from both groups completed a questionnaire that asked the subjects to rate the level of ease at which specific job-related activities were for them to perform. Hand-strength/grip and range of motion measurements were also taken utilizing a handheld dynamometer and goniometer respectively by one evaluator both before and after a one-month duration of the experimental group's exposure to SORxSOAP. Independent t-tests were performed to test the difference between pre and post-test values for the control and experimental groups. It was found that SORxSOAP significantly improves wrist flexion range of motion, results in significantly greater improvements in hand-grip strength compared to control, and significantly improves wrist extension range of motion over a one-month period. Improvements in the ease of job-related activities also appear to be correlated to the

use of SORxSOAP for items #1, 2, 3, 4, 5, 6, 7, and 9. Significant differences were also found between the slicing and non-slicing hands for pre-test wrist extension range of motion measurements, indicating the presence of possible over-use injury in occupations and activities placing excessive demand on certain body regions. This provides isolated evidence that supports the notion that SORxSOAP could be a viable option for preventing the steady decline of wrist extension range of motion and actually promoting and maintaining soft tissue and overall joint health, making it clear how further investigation into the effects of SORxSOAP can not only improve joint and soft tissue health, but prevent the emergence of joint and soft tissue impairment entirely. Clinical Bottom Line: The use of SORxSOAP has the potential to significantly improve muscle and soft tissue performance and function over a period of one month.

Keywords

SORxSOAP, Soressoap, Soap, Muscle, Relief, Health, Hygiene, Wellness, Injury, Prevention, Overuse Injury, Soft Tissue, Massage, Shower, Bath and Body

1. Introduction

Instrument-assisted soft tissue mobilization (IASTM) has been documented in major medical records dating back to the 1300's in the form of Gua sha. IASTM is well researched and is widely accepted to improve circulation, decrease pain, improve function, increase strength, and promote overall soft tissue health [1] [2] [3] [4]. However, the administration of this intervention, in most cases, is limited to the brief amounts of time we spend mobilizing our soft tissue. Even in instances where soft tissue mobilization interventions are applied, not just by an individual tending to themselves, but by a licensed professional, exposure time to the intervention is limited based on daily schedules and accessibility to health care professionals. SORxSOAP offers a pragmatic strategy by which one may mobilize their soft tissue while simultaneously showering or washing a specific part of their body. If SORxSOAP could be shown to significantly affect the range of motion, strength, function, sensation, and overall health of soft tissue, such a modality could be utilized as a form of instrument-assisted soft tissue mobilization performed by oneself to directly aid, or supplement, the soft tissue healing process in a consistent manner that promotes recovery and soft tissue wellness.

Occupations that require repetitive use of the extremities in a physical manner demonstrate a vulnerability to overuse injuries. These professions may benefit from a daily intervention that promotes soft tissue health and decreases the probability of repetitive-use injury. The purpose of this study is to demonstrate the effects SORxSOAP has on functional measures of upper extremity activity in the slicing hands of employees at corporate delis over the course of a one-month period.

2. Methods

31 employees from nine corporately run deli franchises were asked to participate in a study involving the use of SORxSOAP **over a period of one month**. After agreeing to participate in the study, 31 subjects were randomly assigned to either an experimental group or to a control group **through random sampling**. Twenty-one subjects in the experimental group were given a one month's supply of SORxSOAP to use on a regular basis while showering. The experimental group viewed an instructional video on how to administer the SORxSOAP to the elbow flexors, wrist flexors and wrist extensors while showering. Ten subjects in the control group were not exposed to any independent variable.

The subjects from both groups completed an informational questionnaire on which was recorded demographic information, along with a questionnaire that asked the subjects to rate the level of ease at which specific job-related activities were for them to perform. The scale was an 11-point ordinal scale from 0-10, with 10 representing performance exceeding expectations and 0 representing disability relative to performing at a job-required level. A copy of this informational questionnaire can be found in **Appendix A**. Hand-strength/grip measurements were also taken utilizing a handheld dynamometer on both hands. Range of motion was measured utilizing a wrist and hand goniometer by one evaluator. Validity and intra-rater reliability for handheld dynamometry and goniometric measurement have been well established in the literature [5] [6]. Range of motion measurements included wrist flexion and extension on both hands. Measurements were taken before the administration of the SORxSOAP to the experimental group during a pre-test measurement. This pre-test assessment included all of the previously mentioned measurements, in addition to others that are typical of such research endeavors to represent a baseline data set upon which to draw comparisons (e.g. hours worked). A post-test measurement was taken at a time one month later, during which time all categories of measurement were re-administered by the same evaluator as in the pre-test measurement.

Descriptive and inferential statistical measurements were then administered utilizing independent t-tests and paired t-tests on the pre-test measurement data, the post-test measurement data, and the change in the data that occurred between the pre-test measurements and the post-test measurements during a period of one month.

3. Results

Independent t-tests were performed to test the difference between pre-test values for the control and experimental groups. With the exception of a significant difference between the pre-test values for the control and experimental groups regarding range of motion into wrist extension of the slicing hand, all pre-test comparisons between the control and experimental groups were found to be non-significant, increasing the number of possible comparisons that can be

drawn.

Concerning hand-grip strength of the slicing hand, measured using a hand-held dynamometer, the experimental group significantly improved their hand-grip from pre-test to post-test, while the control group did not. Finally, there was a significant difference between the improvements in hand-grip strength made from pre to post-test between the control and experimental groups. The bottom-line findings for analysis concerning hand-grip strength of the slicing hand support the statement “the people who used SORxSOAP significantly improved their hand-grip strength over a course of one month”. These findings also support the statement “SORxSOAP use over a one-month period resulted in significantly greater improvements in hand-grip strength (in a dominant/slicing hand) as compared to control.” Graphical representation of these findings is included in **Table 1**.

Concerning range of motion of the slicing hand into wrist flexion, measured using a goniometer, the experimental group significantly improved their wrist flexion range of motion in their slicing hand from pre-test to post-test, while the control group did not. In addition, there was a significant difference between post-test values for control and experimental groups. Finally, there was a significant difference between the improvements made in wrist flexion range of motion between the control and experimental groups from pre-test to post-test. These findings support the statement “SORxSOAP significantly improves wrist range of motion into flexion over a one-month period.” These findings also support the statement “SORxSOAP use over a one-month period resulted in significantly greater improvements in wrist flexion range of motion (in a dominant/slicing hand) as compared to control.” Graphical representation of these findings is included in **Table 2**.

Concerning range of motion of the slicing hand into wrist extension, measured using a goniometer, the experimental group significantly improved their wrist extension range of motion in their slicing hand from pre-test to post-test, while the control group did not. In fact, wrist extension range of motion actually decreased from pre-test to post-test in the control group, which raises some potential inquiries for future research touched upon in the Discussion section. These findings support the statement “the people who used SORxSOAP over a one-month period significantly improved their wrist extension range of motion”. Graphical representation of these findings is included in **Table 3**.

Concerning item analysis of the informational questionnaire administered to the control and experimental groups during the pre and post-test measurements, improvements in the ease of job-related activities appear to be correlated to the use of SORxSOAP for items # 1, 3, 4, 5, 6, and 7. Improvements in the ease of job-related activities seem to imply causation regarding the use of SORxSOAP for items # 2 and 9. The statements that are supported for the use of SORxSOAP concerning the items on the informational questionnaire administered to the subjects of the study can be found in **Appendix B**.

Table 1. Findings relative to grip strength (slicing hand).

Group	Pre-test Grip Avg	Post-test Grip average	Average Improvement
CON	100.3 ± 24.45427	101.1 ± 27.28634172	0.8 ± 5.652924514
	101.1429	118.4285714	17.28571429
EXP	±	±	±
	33.44142	38.85430662***	12.61008667###

***significant within-group difference ($p < 0.001$), ###significant between-group difference ($p < 0.001$).

Table 2. Findings relative to wrist flexion range of motion (slicing hand).

Group	Pre-Test Flexion	Post-Test Flexion	Average Improvement
CON	71.8 ± 8.256983576	72.2 ± 11.3705272	0.4 ± 6.736303
	73.85714286	79.42857143	5.571429
EXP	±	±	±
	6.567234687	7.406560798***#	5.10462#

*** significant within-group difference ($p < 0.001$), #significant between-group difference ($p < 0.05$).

Table 3. Findings relative to wrist extension range of motion (slicing hand).

Group	Pre-Test Extension	Post-Test Extension	Average Improvement
CON	75.4 ± 9.252026805	73.9 ± 9.37431479	-1.5 ± 4.719934
	67.42857143	76.47619048	9.047619
EXP	±	±	±
	8.766820567#	7.298075415***	5.084055###

***significant within-group difference ($p < 0.001$), #significant between-group difference ($p < 0.05$), ###significant between-group difference ($p < 0.001$).

4. Discussion

There was no intention to treat analysis necessary for this study, and the results of this study are promising in many ways. This investigation yielded a successful pilot study into the potential health benefits of the use of SORxSOAP. A power analysis was performed and showed that the sample size in this study was smaller than what would be necessary to have sufficient power, and as such, the results of this study show promise regarding the support of further research into investigating the health effects and benefits of the use of SORxSOAP.

Significant within and between-group effects found in the functional performance measures of deli meat slicers suggest that similar effects might be found in other professions that are demanding upon the wrist musculature. Such professions where the investigation into the effects of SORxSOAP use and job performance might include professions in the areas of carpentry, mechanics, plumbing, electricians, massage therapists, and even for use in sports and athletics. That being said, the significant effects found within this study also warrant

further investigation into professions and participation in activities that are demanding upon a host of other muscle groups, as SORxSOAP is advocated for the use of a wide variety of body regions, with instructional videos for self-administration available at their website: <https://sorsoap.com/>.

Limitations of this study include the fact that this study was not blinded. In addition, the evaluator who measured and recorded the information contained in the data set for the subjects included in this study, although a trained and licensed healthcare professional, was also one of the co-founders of SORxSOAP. This encourages the use of methods utilized to blind both subjects and evaluators to control and experimental groups as well as encouraging evaluators/administrators to be utilized who have no potential conflicts of interest, so as to minimize the potential effects of bias in the investigation into the potential effects and benefits of the use of SORxSOAP.

Clinical Bottom Line:

The use of SORxSOAP has the potential to significantly improve muscle and soft tissue performance and function over a period of one month. SORxSOAP used over a longer period should yield equal or even greater benefits than those reported in this one month study. A further study with a longer experimental duration is needed to validate this claim. The use of SORxSOAP also has the potential to result in significantly greater improvements relating to muscle and soft tissue performance and function than those who do not use SORxSOAP.

With that being said, during analysis of all possible comparisons between measurements taken, it was discovered that there was a significant difference between the slicing and non-slicing hands of the subjects in the experimental group for the pre-test measurement of wrist extension range of motion. The experimental group had significantly less wrist extension on the slicing hand vs the non-slicing hand. This finding may indicate a predisposition to wrist dysfunction in the slicing hand of deli meat slicers. Graphical representation of this finding is included below in **Table 4**. Less wrist extension ROM on one extremity compared to the other is atypical. It could be hypothesized that continuous hours on the deli slicer in an extended position may place excessive strain on the slicing wrist and hence predispose those individuals to cartilage degeneration. Premature degeneration of the articular cartilage of the wrist due to repetitive slicing is a concern. Maintaining healthy soft tissue function and range of motion is vital for deli meet slicers to perform their job duties at an optimal level. SORxSOAP could be a viable option to maintain the desired range of motion,

Table 4. Pre-test comparison between slicing and non-slicing hands in experimental group.

	Extension Range of Motion
Experimental Pre-Test Non-Slicing Hand	72.90476 ± 7.251929
Experimental Pre-Test Slicing Hand	67.42857 ± 8.766821 [#]

[#]significant between-group difference (p < 0.05).

Table 5. Comparison between 8 subjects with greatest wrist extension discrepancy and normal values.

Group	Average Wrist extension	Average Difference between Slicing and non-slicing hand
Greatest loss of wrist extension (slicing hand) Top 8	59.87 degrees	11.25 degrees
Norm values [7]	71 deg	NA

improve soft tissue health and prevent the occurrence of overuse injury.

The findings demonstrated in **Table 4** warrant further data analysis on the relationship between the hours worked as a deli slicer and loss of wrist extension on the slicing hand. The top 8 slicers who demonstrated the greatest loss of wrist extension of the slicing hand compared to the non-slicing hand were used for further data analysis. This data is shown in **Table 5**.

The slicers demonstrating the greatest difference in wrist extension of the slicing hand vs the non-slicing hand have been slicing for an average of 6.18 years. Performing a repetitive task prone to overuse, such as slicing, may contribute to loss of ROM, particularly wrist extension of the slicing hand. These slicers on average have 11 degrees less than normal wrist extension [4]. Furthermore, the control group demonstrated a 1.5 degree decrease in wrist extension over the one month period. This decline was not statistically significant but creates a question of whether increased time on the slicer will eventually lead to loss of extension range of motion. The loss of extension is hypothesized to be due to the steady degeneration of the wrist joint due to over-use on the deli meat slicer. The good news for this population is that after one month of using SORXSOAP the group demonstrated an average improvement of 9.75 degrees of wrist extension. This improvement supports the theory that SORxSOAP could be a viable option for preventing the steady decline of wrist extension range of motion and actually promoting and maintaining soft tissue and overall joint health.

5. Conclusions

Comparisons between the control and experimental groups in the data set of this study support a causative relationship between the use of SORxSOAP and significant improvements for hand-grip strength and wrist flexion range of motion. However, the presence of a significant difference between the control and experimental groups for the pre-test values concerning wrist extension range of motion allows us to support only a correlative relationship between wrist extension range of motion and the use of SORxSOAP.

From this data, we can confidently conclude the following statements:

“The people who used SORxSOAP over a one-month period significantly improved their hand-grip strength.”

“SORxSOAP use over the course of a one-month period resulted in significantly greater improvements in hand-grip strength as compared to control.”

“SORxSOAP significantly improves wrist range of motion into flexion over a one-month period.”

“SORxSOAP used over a one-month period resulted in significantly greater improvements in wrist flexion range of motion as compared to control.”

“The people who used SORxSOAP over a one-month period significantly improved their wrist extension range of motion.”

The data set also allows us to support statements regarding the items contained in the informational questionnaire administered to the control and experimental groups during this study as contained in **Appendix B**. Significant improvements were reported for 8 of the 9 job specific tasks. The tasks demonstrating the most significant improvements after using SORxSOAP were **“The ability to reach for meat/cheese and place on slicer”** and **“the ability to chop cheeses teaks on grill.”**

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Appendix A

The Patient-Specific Functional Scale—SORxSOAP Edition

Thank you for participating in our study. I have identified activities that are meaningful and necessary to fulfill your responsibilities as an employee of Jersey Mikes.

Participant info:

Last (Init.)	First Name	Age (Yrs)	Weight (lbs.)	Height (in.)	Dominant Hand	Slicing Hand	Weekly Hours Worked	Hours Worked on Slicer/Line
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Patient-specific activity scoring scheme (write the number that best matches your ability to perform the tasks below according to the scale provided. If you don't perform that task just right NA for Not Applicable)

0 1 2 3 4 5 6 7 8 9 10

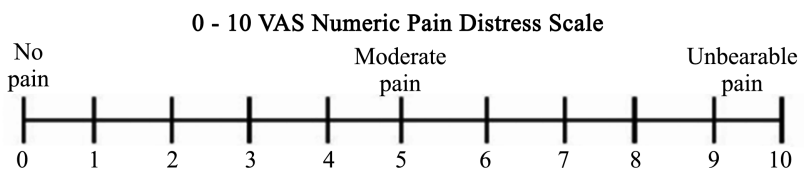
0	5	10
Unable to perform at desired level	Able to perform at desired level	Performing at a level beyond expectation

Activity	Initial Date	Do you have pain with activity? If yes, where? rate pain from 1 - 10 using VAS provided below.	Follow Up (4 weeks)
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Date:

- 1) Cutting deli meat on slicer
- 2) Reaching for meat/cheese and placing on slicer
- 3) Shaking salt, pepper, etc
- 4) Squeezing oil, vinegar, etc,
- 5) Cut Sandwich
- 6) Wrapping Sandwich
- 7) Placing deli meat/cheese on sandwich
- 8) Using cash register
- 9) Chop Cheesesteaks on Grill

Add:



Appendix B

Bottom Line Findings on Item Analysis:

#1: The people who used the SORxSOAP significantly improved their ability to “cut deli meat on a slicer.”

#2: The SORxSOAP significantly improved the experimental group’s ability to “reach for meat/cheese and place on slicer.”

#3: The people who used the SORxSOAP significantly improved their ability to “shake salt, pepper, etc.”

#4: The people who used the SORxSOAP significantly improved their ability to “squeeze oil, vinegar, etc.”

#5: The people who used the SORxSOAP significantly improved their ability to cut a sandwich

#6: The people who used SORxSOAP significantly improved their ability to “wrap sandwiches.”

#7: The people who used the SORxSOAP significantly improved their ability to “place deli meat/cheese on sandwich.”

#8: There were no significant differences attributed to SORxSOAP in an ability to “use a cash register.”

#9: SORxSOAP significantly improved the experimental group’s ability to “chop cheesesteaks on grill.”