

A Voice of the Customer Approach to Determine Employee Perception and Acceptance of Workplace Stretching Implementation in a Mature Ergonomic Process

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Abstract: Various studies have measured the value of workplace stretching as either a stand-alone option to prevent musculoskeletal injuries; as a part of a more holistic systems-based approach to ergonomics and injury prevention; or as a part of a well-being initiative. This paper describes one case study for a US-based manufacturing location that has a proactive systems-based ergonomics process in place and was interested in adding pre-shift stretching to the ergonomics process. The intent of this paper is to describe the Voice of the Customer (VOC), by comparing pre-implementation attitudes of the employees involved in the stretching process with the same employee population after the stretching program had been implemented. This study was conducted to obtain employee perceptions of workplace stretching so the process can be continually improved to positively impact safety culture and employee wellbeing.

Keywords: Workplace Stretching, Ergonomics, Voice of the Customer

1. Introduction

There has been considerable research on workplace stretching as a means of preventing musculoskeletal injury. The interest in this topic is varied and studies have suggested that stretching is beneficial, while others have suggested that stretching is not beneficial to reducing strain-type injury. A brief review of the pros and cons of stretching results in inconclusive evidence or confounding evidence in most cases. Middlesworth developed a concise position on the pros and cons of stretching in his article "The Arguments Against Workplace Stretching (And the Counter-Arguments)". There have been several articles written lately that try to address the cost/benefit of stretching programs and suggest that they are not beneficial from a financial comparison of time versus benefits. Another article that was written in 2004 by Joffe is referenced in Middlesworth web posting that attempts to derive the financial aspects of implementing a pre-shift stretching program. One thing that is clear throughout these articles is the differentiation between stretching alone versus a more holistic ergonomics process that includes engineering and administrative improvements. A sample engineering change might be improving how materials are positioned to the employee or the use of a lift to move heavy objects in the work. A sample administrative change might include cross training, so employees perform a variety of tasks throughout the shift. Stretching is a part of an administrative improvement. So, within this debate, there needs to be a delineation between stretching and stretching as a part of a larger systems approach to ergonomics.

There's plenty of studies that suggest there is inconclusive evidence around stretching having a statistically-significant effect on reducing work-related MSDs. Most of the studies we reviewed shared a similar conclusion. Gasibat, Simbak, and Aziz (2017) conducted a literature review of 200 studies on workplace stretching based on a title search and reduced the detailed analysis to 20 studies that were of interest. Based on the authors' conclusions, warm-up and conditioning are important in several of the studies and there is evidence that flexibility and employee perception of self-worth is increased, but the overall conclusion was that stretching alone does not prevent occupational MSD injury. Moore (1998) conducted a study of 60 participants in a 36-session stretching program to determine flexibility, and participants did increase flexibility and had an improved overall increase of body perception. In other words, participants coming out of the program had an increased perception of body position when performing work. The common phrase used in safety awareness around this topic is "Eyes and Mind on Task".

McGorry and Courtney also published a literature review of various studies on the topic. The authors examined the findings from eight research studies in 1995, then examined additional studies in 2006. The authors conclusion after examining the details concluded that the most positive support for stretching was a part of an overall ergonomics process that included engineering changes and other administrative controls as a part of a system-based approach to ergonomics. Mullins (2019), in an article in Professional Safety, concentrated on employee engagement in safety, concluding that employees that are highly engaged are less likely to sustain a workplace injury. This study concluded that employees with a voice in the safety process are less likely to become injured. This type of effort also includes management commitment and having a culture where recognized hazards are corrected or dealt with in an appropriate manner (e.g., planned improvement).

2. Voice of the Customer

Based on some of the conclusions and suggestions in the research, the authors decided to implement a stretching process within a manufacturing plant that already has a systems-based approach to ergonomics. The system includes engineering and administrative controls, a team structure, and regular training throughout the organization. Several engineering controls have documented productivity improvements to parallel the ergonomic risk reduction. As an example, employees were moving parts as a part of an assembly process and complained of wrist pain during the scooping portion of the job. An ergonomics team, consisting of management and hourly employees was formed to study the job. After several months, an engineering improvement was identified and implemented to eliminate the scooping task. The improvement solution also reduced manual lifting of materials moving a cart around the plant and removing containers from the cart. This engineering control eliminated the employee concern and resulted in a productivity gain from the process. The plant continually strives for continuous improvement opportunities like this, and workplace stretching was of interest as one component of the ergonomics and safety process.

The authors worked with plant leadership to develop a set of recommended stretches based off information found in the validated Physical Demands Assessment (PDA) documents. The PDA documents detail all physical requirements of the job, including the amount of lifting, carrying, pushing, pulling in the various jobs. To get a pulse of what employees would like to see in a stretching program, how they feel about their daily participation and whether they feel management supports the program, a baseline Voice of the Customer survey was deployed. A Voice of the Customer survey is a common tool used in lean and six-sigma processes. Qualtrics defines VoC as: 'a term that describes your customer's feedback about their experiences with and expectations for your products or services. It focuses on customer needs, expectations, understandings, and product improvement. VoC programs have gained traction over the years and are fast-growing segments of a core business strategy for organizations. VoC efforts work exceptionally well for brands as customers demand more direct engagement with a firm and because capturing and acting on customer feedback is critical to understanding a prospect's complex decision-making process.'

Another good description of VoC was found on I6Sigma's web site: 'The "voice of the customer" is a process used to capture the requirements/feedback from the customer (internal or external) to provide the customers with the best in class service/product quality. This process is all about being proactive and constantly innovative to capture the changing requirements of the customers with time. The "voice of the customer" is the term used to describe the stated and unstated needs or requirements of the customer. The voice of the customer can be captured in a variety of ways: Direct discussion or interviews, surveys, focus groups, customer specifications, observation, warranty data, field reports, complaint logs, etc. This data is used to identify the quality attributes needed for a supplied component or material to incorporate in the process or product.'

3. Program Design and Perceptions

Within this workplace stretching project, stretching leaders called Champions were trained by the authors. In addition to training the champions on stretching, the entire implementation and leadership team discussed the role of the daily stretching session (specifically the warm up period) as a communications tool. The idea is to have discussions on any operational, quality, or even personal celebrations during the stretching session. During the champions training, the team agreed to keep the stretching sessions to 5 minutes at the beginning of each shift to fit into the existing, established production schedules. The plant operates on a 12-hour shift, and consists of four groups (A, B, C, D shifts), with a 4-on, 3-off, 3-on, 4-off schedule.

This project started with a survey of production and management employees to get a baseline on what employees (i.e., customers) think about pre-shift stretching in their plant. The purpose of the pre-start survey was to get employee perceptions about stretching and foundational acceptance that could be compared to the same set of questions after the stretching program had been in place for 3 months, and at 6-to-12-month intervals after that. All stretching was performed prior to the shift, with additional communications between the champions and the team around production, quality or personal issues that may be of interest for that team. Once the teams had performed the stretching routines for 3 months, another feedback survey, called a Pulse Survey, was conducted. Both the baseline and pulse surveys could be completed online or through paper responses, if the employee did not feel comfortable using an internet-based survey option.

Some high-level operational areas of investigation for the Pulse survey included:

- How do you think the program is going?
- What is your participation and involvement like?
- Do you have any feedback, or questions about the daily sessions?
- Which stretches and routines do you find effective?
- What kind of benefits do you feel from participation?
- Have you identified any challenges or roadblocks to daily participation?
- Other thoughts, perceptions or concerns?

The initial baseline survey was given to employees, with questions pertaining to the perceived nature of the work, employee perception of stretching, and an explanation of how the stretching would be rolled out. Employees that did not feel comfortable stretching or had another health condition that prevented stretching could just step in place if they wanted. All stretching sessions started with a brief step-in-place warm-up. Based on advice from the program trainer, Stretching Champions pre-selected four appropriate stretches for their group out of a sample set of 44 stretches, but could change stretches as needed. Various whole-body and upper-extremity stretches were selected. The champions set up their teams and the stretching process started. Employees were divided into teams, trained on the stretches, and each team starting pre-shift stretching in their respective area.

After three months of stretching, the trainer that set up the process conducted a follow-up survey (e.g., Pulse Survey) to obtain follow-up feedback from the employees. Both the initial and pulse survey used a simple four category opinion poll, with the choices being completely agree, somewhat agree, somewhat disagree, and completely disagree. 38 employees (37% response) completed the baseline survey, while 52 employees (50% response rate) completed the pulse survey.

Specific questions were designed to determine employee perception of the overall benefits of stretching and management support of the program. The response of the Pulse survey was compared to the Baseline with the results shown in figures 1 and 2. Within figures 1 and 2 below, the Baseline is on the left compared to the Pulse in the right graph. Overall, the completely agree responses increased from 31% to 46%, but some employees did not agree that stretching was beneficial, as the completely disagree scores also increased, from 6% to 15% of the respondents. Management support of the stretching program was also investigated, and the survey results are shown in figure 2. Management support scores for completely agree rose from 19% in the baseline survey to 62% in the Pulse survey, while the scores for completely disagree decreased from 6% to 4%.



Figure 1. Overall Stretching Perceptions



Figure 2. Management Support Perceptions

In the first 3 months of the program, 44% of the employees stretched once per day, although there was indication that some of the employees continued to stretch throughout the shift, as 39 % of the employees stretched on their own at another time during the work day, following the pre-shift group session. Most employees think that the 5 minutes of stretching time is adequate, however there were some comments that the time should be extended to get more benefit. Figure three summarizes the participation in the program.

Survey Section	Baseline Summary	Pulse Summary
Daily Stretching	NA	83% participate daily 44% stretch once/day 69% stretch for up to 5 minutes each time 64% participants stretch before work begins - Majority of participants think stretching time is adequate 71% of participants have no issues with performing current stretches comfortably or safely

Figure 3. Daily Participation in the Stretching Program

During the pulse survey, employees were asked about potential changes or improvements to the program. 18% of employees liked the stretching program, but thought more time was needed to perform the stretches. Other wanted the schedule changed so there was no shift overlap and everyone could get off in time. 21% of the pulse respondents wanted to change the routines more often to affect other body parts, while 23% thought no changes were needed. 12% wanted more stretches for the back and hands, which is easy to do because the facility has 44 stretches that can be used by the stretching champions. Another question asked on the survey measured stretching/team leadership. 25% of the participants indicated in the pulse survey that they wanted to be trained to lead the stretching program in their department.

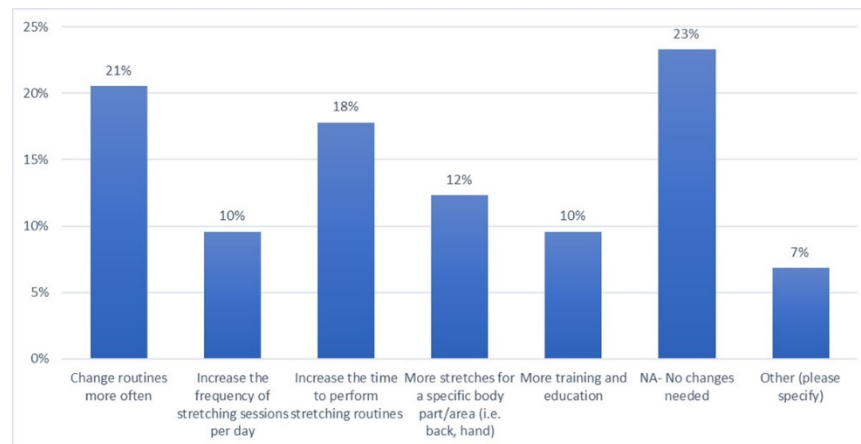


Figure 5. Future State Recommendations

This VoC research suggests that employee generally have a positive outlook on stretching, but there is no universal agreement on stretching, as there is a percentage of the workplace population that have underlying or personal conditions that may prevent participation. While previous studies that do not recommend stretching as a prevention measure, and instead recommend engineering change, this facility has a proven track record of positive ergonomics-related engineering changes. Even if an employee chooses to not stretch, they can participate in the group activity through the warm up and add to the group discussion during the stretching session. This research, although limited in scope, suggests that the group dynamic adds to the overall safety culture in the facility, as reflected in the pulse survey question on management commitment.

These future state recommendations will be reviewed and incorporated into the program and a second pulse survey will be conducted in the future. Note: The recent COVID-19 virus has limited the space available for stretching groups, and team stretching has been suspended during the pandemic. Employees have been encouraged to stretch on their own, at their workstation while maintaining distance and PPE requirements since March 2020. It is our intention to restart the team stretching and update the Voice of the Customer in 2021.

4. References

- Choi, S. Do Stretching Programs Prevent Work-related Musculoskeletal Disorders? December, 2010.
<https://www.researchgate.net/publication/260753282>,
Joffe, M., Exploring The Myth Behind Stretching Programs, *Proceedings of the 7th Annual Applied Ergonomics Conference*, March 8-11, 2004.
https://www.mhi.org/downloads/industrygroups/ease/technicalpapers/Myth_behind_stretching_EASE.pdf

- Gasibat, Q., Simbak, N., Aziz, A., Stretching Exercises to Prevent Work-related Musculoskeletal Disorders – A Review Article, *American Journal of Sports Science and Medicine*, 2017, Vol. 5, No. 2, 27-37, Available online at <http://pubs.sciepub.com/ajssm/5/2/3>, May 2017.
- Moore, T., A Workplace Stretching Program: PHYSIOLOGIC AND PERCEPTION MEASUREMENTS BEFORE AND AFTER PARTICIPATION, *AAOHN JOURNAL*, December 1998, VOL. 46, NO. 12, pp.563-568.
- McGorry, R. and Courtney, T., Worksite Exercise Programs, Are they an Effective for the Prevention of Musculoskeletal disorders of the Upper Extremities? *Professional Safety*, April, 2006.
- Middlesworth, M., The Arguments Against Workplace Stretching (And the Counter-Arguments), <https://ergo-plus.com/workplace-stretching-arguments/>
- Mullins, R., Blair, E., and E.S. Dunlop, Management Leadership, Improving Employee Safety Engagement, *Professional Safety*, November, 2019, pp. 40-42.
- <https://www.qualtrics.com/experience-management/customer/what-is-voice-of-customer/>
<https://www.isixsigma.com/dictionary/voice-of-the-customer-voc/>