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Barreling Down on Ergonomics to Improve Occupational Functioning: Exploration of an Ergonomic Program to Decrease Occupational Deficits & Musculoskeletal Disorders for Brewers

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Barreling Down on Ergonomics to Improve Occupational Functioning: Exploration of an Ergonomic Program to Decrease Occupational Deficits & Musculoskeletal Disorders for Brewers

A Doctoral Experiential Capstone Project Final Report

Presented to the Faculty of Western New England University

In Partial Fulfillment of the Requirements for the

Entry-Level Doctorate

in

Occupational Therapy

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A Doctoral Experiential Capstone Project Final Report

By

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July 2023

APPROVED BY:

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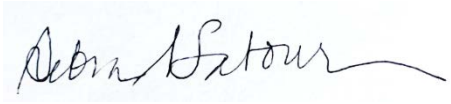

Debra Latour, OT, PP-OTD, M.Ed., OTR, FAOTA — 07/23/2024
Doctoral Experiential Capstone Coordinator — Date

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I also want to thank my husband, Michael Rosenbaum, for his continued support these last three years and my mother, Tamara Freedman, for always believing in me. Lastly, I want to thank my three cats, Ajani, Sorin, and Ashiok, for being both a help and a hindrance throughout this project.

Abstract

Ergonomics is an important consideration for all workspaces due to its impact on the productivity and health of employees. Poor ergonomics can lead to the development of musculoskeletal disorders which have detrimental effects on long-term physical and mental health. These factors influence the workplace but also impact the daily occupations of employees outside of work and may affect their quality of life. Based on the literature, ergonomic programs have been found to be an effective form of improving body mechanics and environmental factors to improve productivity and health in the workplace. An online ergonomic program was developed for brewers employed at breweries around America to improve ergonomics and decrease the likelihood of developing musculoskeletal disorders. Breweries are a unique setting with unconventional spaces and needs in the community. A needs assessment was conducted to gather data using literature, as well as a survey and task analysis of the brewing population. The culmination of the capstone project found that the ergonomic program may be a useful tool to improve the ergonomic knowledge of brewers. Additionally, a correlation was found between ergonomic knowledge and working while in pain or injured, as well as a correlation between working while in pain or injured occupational deficits outside of work. More research and programs should be conducted with the brewing population to determine the impact ergonomics may have on productivity and occupational wellness.

Keywords: ergonomics, musculoskeletal disorder, brewer, breweries

Background

Ergonomics is the study of the workplace, workers in that environment, and how these factors impact productivity, mental health, and physical wellness (Oguns, 2023; Resnick & Zanotti, 1998; Sohrabi & Babamiri, 2021). Due to unique job functions and environments, it can be challenging to generalize ergonomic tools applicable in every workspace. Poor ergonomics can lead to the development of musculoskeletal disorders (MSDs), which are defined as pain or injuries impacting the muscular system of the body. These are often caused by repetitive movement, overuse, hyperextension, and lifting of heavy or awkward objects. Poor ergonomics in the workplace can also lead to occupational deficits outside of work due to pain or injury and this could decrease the quality of life for those individuals (Mgbemena, 2022). Breweries are well-established gathering places in American society, as well as throughout the world. The craftspeople who ferment and create beer are referred to as brewers. Brewing on an industrial scale is a job involving heavy machinery and manual labor. Brewers often work in unconventional settings, such as converted barns or churches, and at different hours depending on the expectations throughout the brewing process. According to the Brewers Association Annual Craft Brewing Industry Production Report for 2023, breweries currently employ 191,421 individuals around America which is a 1.1% increase from the previous year (BA, 2024). The initial research and needs assessment for this doctoral experiential program was focused on microbreweries, which produce less than 15,000 barrels per year, or smaller operations (see Appendix L for literature review; see Appendix K for needs assessment). This was due to those breweries having typically smaller budgets and thinner margins, as well as less employees, which means employees may be doing multiple jobs or working alone. Per the Occupational Safety and Health Association (OSHA), businesses with 10 or less employees do not have to keep a log of injuries or illness, which means there may be less oversight and awareness of MSDs or other injuries due to ergonomics (OSHA, n.d.).

The research shows there is a correlation for brewers between occupational deficits and pain or injuries acquired in the workplace (Lavery, 2022). According to Ogundiran, et. al. (2020), brewers reported high

levels of MSDs. An ergonomic program for brewers was shown to decrease high-risk activities for MSD development (Nino, 2021). Both online and in-person ergonomic programs are effective in reducing pain and injury in the workplace, as well as improving productivity and decreasing workmen's compensation claims (Abdollahi, et. al., 2020; Cinkay, 2023; Deouskar, 2017; Zerguine, 2023). Additionally, there was a correlation between development of an MSD and ergonomic knowledge level (Attia, et. al., 2023).

Theoretical Frameworks

Educational programs are meant to provide guidance and knowledge to participants in order to influence behaviors. The transtheoretical model is a system that measures behavior changes through defined steps. This was chosen because an educational program can fit into any of the steps in order to influence behavior (Prochaska & Velicer, 1997). However, the program made for this doctoral program would be particularly applicable during the action phase or maintenance phase in order to prevent returning to one of the earlier phases.

The People-Occupations-Environment-Performance (PEOP) model is an occupational therapy model that evaluates how different inputs can impact occupational performance (Bass, et. al., 2024). Due to the dynamic nature of this model, influencing one factor can alter how the participant engages with the other factors. As an ergonomic educational program, the goal was to change the mindset and body mechanics of the participants which could be accomplished by providing knowledge on environmental modifications and changes to work-related activities.

Purpose

The purpose of this doctoral experiential capstone project was to create an online educational ergonomic program tailored to brewers to provide brewers with knowledge on how to improve productivity and health and wellness in the workplace. The long-term goal was that by using this knowledge, brewers may have decreased MSDs and improved occupational engagement in daily life activities.

Doctoral Experiential Project

The doctoral experiential project was originally proposed to be an in-person ergonomic training for breweries located in Massachusetts and Connecticut. During the initial needs assessment, the researchers

learned that the efficacy of ergonomic training, both online and in-person, has consistently positive results. When considering the literature along with the long-term sustainability of the program, it was decided to transition the program to an online format. This would increase access to all the states and ease of use due to the lack of a set schedule for the participants. To create the ergonomic program, a survey and task analysis were completed to better assess the needs of the brewing community.

Survey

To assess the needs of the brewing community, a convenience sampling survey was sent to the state brewers' guilds, whose information was found via searching using the internet. The survey included demographics, work-related pain, occupational deficits, environmental factors, current level of ergonomic knowledge, and areas that participants were interested in learning about. The inclusion criteria included being currently employed at a brewery, being 18 years of age or older, and agreeing to participate in the survey.

Task Analysis

A task analysis was completed on site at a brewery with informed consent of the employees and owner. The Rapid Entire Body Assessment (REBA) was used during the skilled observation of brewery employees to evaluate the likelihood of developing an MSD due to a specific job task.

Ergonomic Program

Based on the findings from the literature, the survey, and task analysis, an educational ergonomic program was created tailored to brewers. The program was developed using an application called Edapp by SafetyCulture. This was chosen because it is free, has unlimited member access to courses, and was deemed to have good ease of use for participants. The program was able to be started and stopped at any time without losing progress and can be accessed anywhere with internet access. There are versions available for computers, tablets, and mobile devices. The program consisted of three separate modules: Ergonomics 101, Environmental Adaptations, and Preventative Strategies. Ergonomics 101 was an overview of the importance and meaning of ergonomics and MSDs, the impact ergonomics can have on both the working environment and outside of work, as well as an overview of safe lifting techniques.

Environmental Adaptations provided generalized knowledge to modify breweries to apply to breweries located in unconventional settings. Additionally, environmental safety concerns were addressed and modifications such as table or sink heights, flooring type, and location of commonly used objects. Preventative Strategies addressed included modifications to avoid non-optimal body mechanics, specifically twisting, leaning, reaching, and pulling/pushing, low-budget equipment recommendations such as yoga mats, exercise bands, stretches and exercises such as back stretches and core exercises, and tips on creating a culture of health and wellness such as asking for help when performing tasks that require heavy lifting. The program was available for 4 weeks with email reminders sent to participants.

Program Measures

The program was measured using a pre-test and post-test survey, as well as four competency checkpoints throughout each module. The pre-test was 16 questions and involved questions relating to demographics, daily work function, Likert- style ergonomic knowledge, and a pain scale. There were 7 post-test questions that were primarily Likert-style and included measurements of ergonomic knowledge, ability to apply information to job, and program takeaways. The competency checkpoints were used throughout the modules as knowledge checks and to assist participants with information processing.

Recruitment

The program was sent to 19 participants who provided their information via email, 4 state brewers guilds who had initially reached out after the survey was sent, 3 breweries who reached out after the survey was sent out, and the breweries who participated in the task analysis.

Results

Survey

Based on the demographic results, 30% were employed as brewers and 28% were employed as brewers and performed other job tasks, such as bartending. 61 brewery employees responded from 27 states across America (see Appendix E for results). The survey results from these participants were extracted to determine if factors like pain or the environment impacted brewers.

The results of the survey found that 69% of brewers reported working while injured or in pain. 65% of

brewers reported that they experienced occupational deficits due to work-related pain, with the majority reporting issues with mobility, resting and sleeping, and hobbies or leisure activities. 51% reported that environmental factors did impact their daily work activities. The environmental factors reported included flooring type, location of machinery, location of heavy objects, and placement of objects. Participants reported wanting to learn more about lifting/carrying heavy objects, stretching/exercises, reaching above shoulder height, and environmental design.

Quantitative analysis of the survey data was completed using the chi square test of independence due to the binary nature of the majority of the quantitative questions. The p-value .10 was chosen due to the exploratory nature of the study. Four hypotheses were formulated to complete this analysis:

1) Alternative hypothesis one (HA1): There is a statistically significant correlation between reported ergonomic knowledge and previously participating in ergonomic training.

   Null hypothesis one (H01): There is no statistically significant correlation between reported ergonomic knowledge and previously participating in ergonomic training.
2) Alternative hypothesis two (HA2): There is a statistically significant correlation between reported work-related pain and occupational deficits outside of work due to work-related pain.

   Null hypothesis two (H02): There is no statistically significant correlation between reported work-related pain and occupational deficits outside of work due to work-related pain.
3) Alternative hypothesis three (HA3): There is a statistically significant correlation between environmental factors at the workplace and reports of pain/injury when working.

   Null hypothesis three (H03): There is no statistically significant correlation between environmental factors at the workplace and reports of pain/injury when working.
4) Alternative hypothesis four (HA4): There is a statistically significant correlation between reported ergonomic knowledge and reports of work-related pain.

   Null hypothesis four (H04): There is no statistically significant correlation between reported ergonomic knowledge and reports of work-related pain.

Based on the results of the chi square test of independence (Table 1), H01 and H03 were proven true due to $p \geq .10$. This meant that there was no correlation between reported ergonomic knowledge and receiving a previous training or environmental work factors and working while in pain or injured. H02 and H04 were true due to $p \geq .10$ when isolating results from individuals who only brewed as their primary job task. However, with the addition of individuals who both brewed beer and bartended as their primary jobs, HA02 and HA04 were true due to $p \leq .10$. This meant that there was a correlation between reported ergonomic knowledge and working while in pain or injured, as well as a correlation between working while in pain or injured and reported occupational deficits outside of work.

Table 1

Chi Square Test of Independence Results

Variables	Job Category	# of Participants	X2	df	P value
Ergonomics knowledge level vs. work-related pain	All participants	61	8.253	1	.004068
	Brewers	18	.2672	1	.605242
	Brewers & Participants who do both bartender and brewing	35	7.0984	1	.007715
	Bartender	13	.6268	1	.428537
	Bartender & Participants who do both bartender and brewing	30	7.2321	1	.007161
	Participants who do both bartender and brewing	17	8.3301	1	.00389
Environmental factors at the workplace vs pain/injury when working	All participants	61	3.2256	3	.358134
	Brewers	18	.8205	2	.66351
	Brewers & Participants who do both bartender and brewing	35	.9699	2	.615713
	Bartender	13	2.4375	3	.486692

	Bartender & Participants who do both bartender and brewing	30	3.7179	3	.293581
	Participants who do both bartender and brewing	17	1.8619	2	.394178
Work-related pain vs occupational deficits outside of work due to work-related pain	All participants	61	8.1317	2	.017148
	Brewers	18	2.5716	2	.276429
	Brewers & Participants who do both bartender and brewing	35	4.7026	2	.095245
	Bartender	13	.7945	2	.672166
	Bartender & Participants who do both bartender and brewing	30	5.2315	2	.073113
	Participants who do both bartender and brewing	17	5.4400	2	.065875
Ergonomics knowledge level vs. previously participating in an ergonomic training	All participants	61	.6141	3	.893197
	Brewers	18	4.2688	2	.118316
	Brewers & Participants who do both bartender and brewing	35	.906	2	.635718
	Bartender	13	1.7333	3	.629556
	Bartender & Participants who do both bartender and brewing	30	3.3173	3	.345242
	Participants who do both bartender and brewing	17	4.1384	2	.126287

Task Analysis

The two tasks chosen were keg lifting due to previous research that found that keg lifting was a high-risk activity for developing an MSD (Brents, et. al., 2021; Ji, et. al., 2023). Lifting a grain bag was chosen due

to the large size and awkward shape of the bags. The results showed that lifting a keg was an activity with a high risk of developing an MSD (Figure 1) which was consistent with the previous literature on the topic. Lifting a grain bag (Figure 3) was found to be an activity that was very high risk of MSD development.

Figure 1

Rapid Entire Body Assessment of Keg Lifting

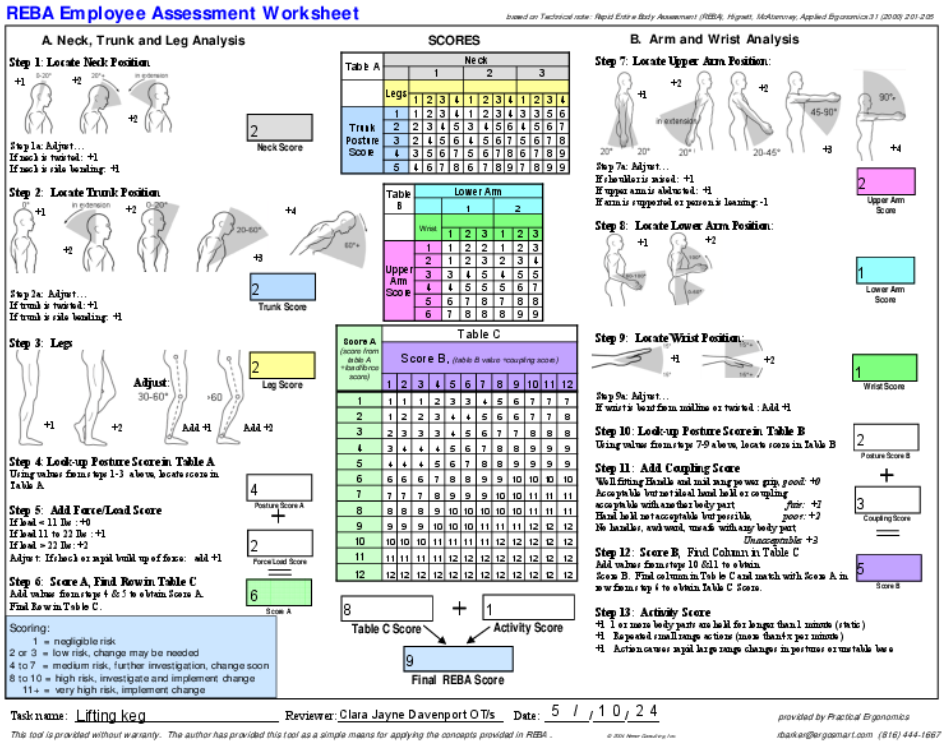
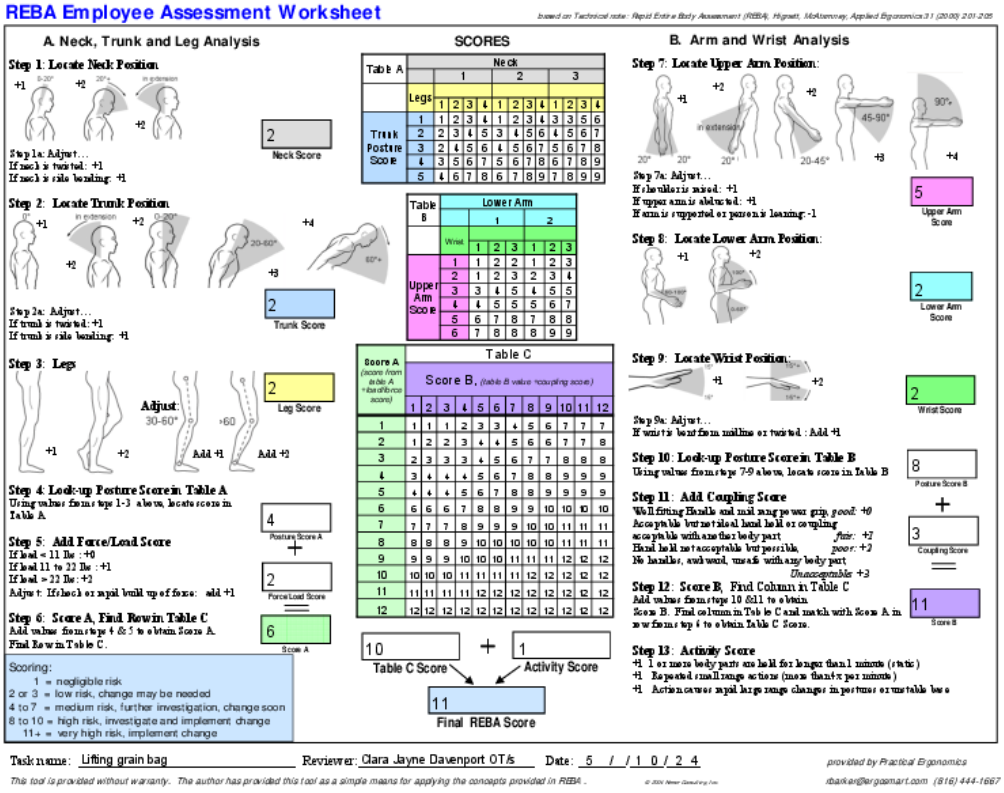


Figure 2

Rapid Entire Body Assessment of Lifting a Grain Bag



Ergonomic Program

Five participants started the modules with one 100% completion of the brewers' ergonomic modules, as well as the pretest and posttest surveys. Due to this, descriptive design was chosen as the method of analysis.

For the pretest of the Brewery Ergonomics Module, the participant reported that they experience pain of 3/10 on average throughout the workday with lifting below the knees, bending, and prolonged standing exacerbating the reported pain and the location of the pain being primarily in the lower back (Appendix F). The participant reported that lifting 50 pounds or more, lifting below the knees, reaching above their shoulders, and prolonged standing were all expected work functions that were impacted due to work-related pain. The participant also reported that work-related pain impacted dressing themselves, hobbies and/or leisure activities, and mobility outside of work. To reduce/prevent pain, the participant reported taking standing/walking breaks, stretching/exercising, using equipment such as floor mats or adjustable chairs/tables, and taking NSAIDs every 60 minutes approximately. On a scale of 1-5, with 1 being no

knowledge and 5 being very knowledgeable, they reported their knowledge on the concept of using correct body mechanics while engaging in work-related tasks and how frequently they reported using proper body mechanics when engaging in everyday job routines was a 4 out 5.

For the post-test survey, the participant reported that on a scale of 1-5, with 1 being no knowledge and 5 being very knowledgeable, their level of knowledge on the concept of using correct body mechanics while engaging in work-related tasks increased to a 5 out of 5 (Appendix G). On a scale of 1-5, with 1 being not significant at all and 5 being very significant, they reported a 5 out of 5 for how applicable the information provided in the educational modules was in relation to their everyday job routine. On a scale of 1-5, with 1 being never and 5 being always, they reported 4 out of 5 likelihood of being able to apply ergonomic strategies/modifications to their everyday job routine. They also reported learning environmental modifications and preventative exercises from the program.

The participant completed the competency questions with a 98% but reported an issue with two multiple choice questions that will be edited by the researchers.

Discussion

The results of the ergonomic program showed that it was a beneficial tool for improving ergonomic knowledge and provided the participant with new strategies to apply to their workplace. Additionally, the survey results showed a correlation between ergonomic knowledge and working while in pain, as well as occupational deficits and working while in pain. Based on this information, if these elements are dynamic, improving ergonomic knowledge may long-term improve pain and injuries at work, thereby decreasing occupational deficits outside of work for brewers.

Strengths

The program is free which allows for smaller breweries with small budgets to have access. It can also be taken as a group or individually throughout the workday, which would also allow for employees to be paid while taking the program.

The program has a high potential for sustainability with the potential to be hosted on the Brewers

Association website or a state brewers guild site (Appendix N). It is easily accessibility and tailored to the community which improves the ease of application for participants.

Limitations

1) One participant completed the ergonomic program. While the results showed an improvement in ergonomic knowledge, a larger sample size would be beneficial for analysis of the effectiveness on a bigger scale.
2) Due to the convenience sampling, there may be a participant bias since those already interested in ergonomics may be more interested in taking a survey or program on the topic. In-person recruitment at breweries or a conference may prove to be a more effective method for future studies.
3) Time constraints may have impacted information gathering and the length of the program. Additional time would have allowed for the researchers to recruit a wider range of participants.
4) Edapp by SafetyCulture requires an application to be downloaded if accessing the program via a mobile device. This may have been a deterrent for some participants.

Recommendations

Further research is needed to determine the effectiveness of this ergonomic program both in the short and long term. An important consideration that was not addressed during this doctoral experiential capstone project was the role of mental health and the culture of health and wellness that is currently pervasive throughout breweries in America. This topic warrants further research and must be taken into consideration when attempting to establish programs that may impact that culture.

Learning Outcomes

Four unique learning objectives for the experiential capstone project were developed in conjunction with the researcher's site mentor, faculty mentor, and doctoral experiential capstone coordinator (Appendix P). The first learning objective was focused on the researcher's ability to understand and effectively deliver an ergonomic program which was accomplished over the course of the 14 week capstone. Two learning objectives were focused on elements of the ergonomic program, including incorporating relevant

ergonomic strategies for brewers and increasing the ergonomic knowledge of participants. These were assessed based on the results of the ergonomic program. The final learning objective was scholarly in nature and used to guide the initial literature review and efficacy of an ergonomic program (Appendix M). These learning objectives were evaluated throughout the 14 weeks and helped guide the researcher's process. They display the growth and progress in the field of ergonomics, program development, and application of occupational therapy skillsets and models that the researcher experienced.

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Appendix A

Memorandum of Understanding

WESTERN NEW ENGLAND UNIVERSITY | WNE
COLLEGE of PHARMACY and HEALTH SCIENCES

DEPARTMENT OF OCCUPATIONAL THERAPY
DOCTORAL EXPERIENTIAL CAPSTONE AGREEMENT
Memorandum of Understanding

Doctoral Student(s): Clara Jayne Davenport, OT/S (a "Student")
WNE OTD Faculty Mentor: Erin Murray, OT, OTD-PP, OTR/L (the "Faculty Mentor")
Doctoral Experiential Site: Western New England University (the "Site")
Site Mentor: Nicole Lavery, OTD, OTR/L, CKTP, CEAS (the "Site Mentor")
Doctoral Experiential Capstone Coordinator: Debra Latour, OT, PP-OTD, M.Ed., OTR (the "Capstone Coordinator")

This Agreement (the "Agreement") is made and effective as of April 8, 2024, by and among the above-named Student, Faculty Mentor, Site, Site Mentor, Capstone Coordinator and Western New England University, College of Pharmacy and Health Sciences, Division of Occupational Therapy (the "University").

Recitals

The University offers a Doctor of Occupational Therapy (OTD) degree program that requires an advanced doctoral experiential project as part of the graduate curriculum. This advanced doctoral experiential project includes both experiential (practicum) and scholarly components. In order to ensure that its students meet the requirements for the degree of Doctor of Occupational Therapy and occupational therapy licensure in the United States, the University has established the OT Doctoral Experiential Capstone project (the "Project"). This Agreement pertains only to the Project.

The Site is the operator of one or more facilities in which such educational experiences presently exist or may be developed. The University and the Site desire to establish a relationship pursuant to which the University shall identify the Site as an appropriate setting for such training, and select students enrolled in the OTD program for placement with the Site for the purpose of completing a Project, upon the terms and conditions hereinafter set forth. The Site is willing to identify one or more of its employees with appropriate professional credentials and experience to serve as Site Mentors and to accept the Student for the purpose of facilitating the Project.

Terms

In order to accomplish the foregoing purposes, and for good and valuable consideration, the parties hereby agree as follows:

1. **Description of Project.**

   A. The Project will be 14 weeks in duration (560 hours) and will occur while the Student is registered for the courses OTD 780 Doctoral Experiential 4:Implementation/Capstone and OTD 785 Doctoral Experiential 4: Mentorship, which are part of the University's OTD curriculum. The Project may be completed on a full or part-time basis consistent with the individualized specific objectives of the OTD Doctoral Experiential Capstone Mentorship Agreement (Appendix A). No more than 20% (112 hours) of the 560 hours may be completed outside of the defined mentored practice setting(s).

   B. Students enrolled in OTD 780 and OTD 785 have not completed their OTD education and are only qualified to participate in a volunteer capacity. No direct care occupational therapy services may be provided by Students unless a licensed occupational therapist is providing supervision in accordance with applicable law, including 259 C.M.R. 3.00.

C. The Faculty Mentor and the Site Mentor will be University employees. The Faculty Mentor and Site Mentor shall not be eligible for or entitled to any additional compensation and or benefits for their services rendered in connection with this Agreement. The Capstone Coordinator will arrange and confirm assignment and placement of each Student with the Faculty and Site Mentors.

D. Refer to the attached Mentorship Agreement (Appendix A) that details the general student learning objectives and up to four (4) individual learning objectives as agreed upon by the Student, Faculty Mentor and Site Mentor.

2. Obligations of the University, Faculty Mentor and Capstone Coordinator.

A. The University shall assume and maintain full responsibility for the administration of its Division of Occupational Therapy, including Program planning, curriculum design and courses.

B. The University shall coordinate with the Site in developing the details of the Project, including course and Project outlines and objectives, Project dates and deadlines, and the Student(s) assigned to the Site. The University will designate a Capstone Coordinator and Faculty Mentor to work with the Site and Site Mentor(s) to coordinate the Project.

C. The University shall provide an orientation and make available ongoing education to the Site and Site Mentors. Site Mentors shall have expertise consistent with the Student's area of interest and may include occupational therapists, health care practitioners, education professionals, administrators, and policy experts. The University will make available to all Site Mentors the OTD Doctoral Experiential Manual and the Mentorship Agreement.

D. The University will inform Students of their responsibility to follow all rules, regulations, policies, and procedures of the Site, those contained in the Division of Occupational Therapy Student Handbook, and all applicable federal and state laws.

E. The University will appoint the Site Mentors as Adjunct Instructors of Occupational Therapy. However, the Site Mentors shall not be employees of the University, shall not be eligible for compensation or benefits from the University and shall remain employees of the Site at all times.

F. The Capstone Coordinator will assign Students to the Site only after all appropriate immunizations, background checks, training, and all other Site requirements have been met.

G. The University will secure and maintain appropriate general and professional liability insurance covering the activities of the Student and the Faculty and Site Mentors with respect to their activities at the Site, with limits of at least $1,000,000 per occurrence and $3,000,000 annual aggregate, with insurance carriers or self-insurance programs covering the University and its employees. The University shall promptly notify the Site of any cancellation or termination of such insurance. The Site and Students are responsible for any additional professional liability insurance or other insurance that they may wish to purchase on their own.

H. The University will ensure that each Student has satisfied the health insurance requirements of the University and the Division of Occupational Therapy prior to assignment to the Site.

I. The University will instruct Students in applicable privacy laws, including the Health Insurance Portability and Accountability Act of 1996 (HIPAA), prior to assignment to the Site and as outlined in the OTD Student Handbook.

J. The University will withdraw a Student from the Site if, after consultation with the Site, the Faculty Mentor, Capstone Coordinator and the Chair of the Division of Occupational Therapy, the University determines such action to be warranted.

K. The Capstone Coordinator will investigate any issue related to the Faculty Mentor, the Site, the Site Mentor, or the Student that is deemed to be impacting the Project and take such corrective action as it deems appropriate in its discretion.

L. The Capstone Coordinator will provide the Site with a copy of the Mentorship Agreement (sample attached) with dates of placement and names and contact information for the Faculty Mentor, Site Mentor and Student for each Student assigned to the Site.

3. Obligations of the Site and Site Mentor.

A. The Site shall work with the University and the Student to accomplish the objectives of the Project. This shall include the development and approval of a Project Proposal which outlines the experiential and scholarly components of the Project. The Site shall provide facilities, equipment, services, and personnel deemed appropriate for each Student to complete the Project. The University will provide individualized objectives for each Student assigned to the Site.

B. The Site and Site Mentor shall supervise each Student's work and provide written and other evaluations of each Student as reasonably requested by the University and as required by the University's accrediting bodies.

C. The Site shall assign a Site Mentor who is appropriately licensed and experienced to provide appropriate guidance and supervision of the Student and the Project.

D. The Site and Site Mentor shall collaborate with the Faculty Mentor and Student to guide each Student through the needs assessment component of the Project Proposal; provide guidance on the logistics of completing the Project; prepare the final Project report and presentation; actively participate in regular communication with the Student and Faculty Mentor; and develop and maintain a system for documenting the Student's experiential hours at the Site and the tasks and activities accomplished during those hours (as identified in the objectives).

E. The Site will inform the Student and the University of any rules, regulations, policies, and/or procedures of the Site with which the Student and/or the University must comply.

F. The Site will permit the Student to access all appropriate personnel, facilities, equipment, supplies, services, and patient records necessary to fulfill the Project objectives.

G. The Site and Site Mentor shall provide the Student with opportunities to participate in the learning environment which may include grand rounds, specialty clinics, office visits, lectures, conferences, in-services, interprofessional team meetings, etc.

H. The Site may suspend and/or terminate any Student's assignment to the Site as a result of health status, repeated poor performance after notice and an opportunity to correct, or other considerations that the Site deems detrimental to patients' or consumers' well-being or the achievement of teaching objectives. Except in emergency circumstances, the Site will not exercise such right until it has consulted with the Capstone Coordinator or the Chair of the University's Division of Occupational Therapy and given the University and the Student a reasonable opportunity to remedy the circumstances that the Site believes warrant suspension or termination.

I. The Site will permit Division of Occupational Therapy faculty or appropriate designees, with reasonable advance notice, to visit the Site for routine assessment and follow-up, to inspect the Site's facilities and services that are available to the Student, to monitor Student progress, and to inspect and consult with appropriate personnel. Upon reasonable advance notice from the University, the Site and the Site Mentor shall participate in accreditation processes as reasonably requested by the University.

J. The Site will make emergency medical care available to Students on the premises through the Site's procedure for handling emergencies. Cost of such emergency care shall be the responsibility of the Student except in cases of gross negligence on the part of the Site.

K. The Site shall obtain and maintain commercially reasonable insurance covering its activities and the activities of its employees and agents.

L. The Site shall be solely responsible for the treatment and care of its clients and patients and for compliance with all laws that apply to its facilities.

4. Mutual Obligations.

A. The Capstone Coordinator, Faculty Mentor, and Site Mentor or other designee of the Site will oversee implementation of the Project and plan for: (i) Project goals and objectives; (ii) Student placement and orientation; (iii) preparation and periodic review of program objectives; (iv) community experiential and scholarly Project activities, especially those that take place at the Site; (v) quality assurance review by the University via evaluation of the Student, the Site, and Site Mentor; and (vi) procedures and timelines for evaluating the Project experience.

B. Each party (the "Indemnifying Party") shall indemnify and hold harmless the other party and its trustees, directors, officers and employees (each, an "Indemnitee") from and against all liabilities, damages, fines, penalties, costs and expenses (collectively, "Liabilities") that arise out of any third-party claim or action alleging (1) any negligent or more culpable act or omission of the Indemnifying Party or its employees or agents, or (2) any material breach of applicable law by the Indemnifying Party or its employees or agents. The Indemnifying Party's obligations pursuant to this Section shall not apply to the extent that any Liabilities arise out of any Indemnitee's negligent or more culpable act or omission, material breach of applicable law, or material breach of this Agreement.

C. Each party shall comply with applicable infection control protocols established by the CDC and other relevant federal, state, and local public health authorities, including but not limited to increased hygiene and sanitation policies, frequent hand washing, the wearing of face masks or shields, and physical distancing guidance when appropriate in a clinical setting.

D. No party to this Agreement shall discriminate against any employee, student or person on account of race, color, religion, sex, sexual orientation, gender identity or gender expression, ancestry, age, national origin, disability or any other status protected by applicable law.

5. Termination.

A. This Agreement shall terminate automatically if all Students assigned to the Site cease to be enrolled at the University for any reason or upon completion of all Projects that are the subject of this Agreement.

B. The University may terminate this Agreement if, after consultation with the Site and Faculty Mentors, the Capstone Coordinator and the Chair of the OTD, the University determines such action to be warranted based on the Student's behavior or failure to comply with their obligations hereunder or under any other applicable University policy.

C. The Site may terminate this Agreement if it has permanently terminated the participation of all Students pursuant to Section 2(H).

6. Miscellaneous Provisions.

A. For purposes of this Agreement, and except as otherwise agreed in writing, no Student will be considered an employee of the University or the Site, but rather will be treated as a student in the doctoral education phase of their professional education. The Students shall not be entitled to any compensation for services

rendered in connection with this Agreement and shall not be eligible to participate in any employee benefit program of the University or the Site including Worker's Compensation.

B. The University's employees, including the Faculty Mentor and Capstone Coordinator, shall have no personal liability for act or omission in connection with this Agreement or the Project. The Site's sole remedy for such acts or omissions shall be against the University.

C. Any use of the University's name, insignia, or logo in any descriptive or promotional literature or communication of any kind with respect to the Project must comply with applicable University policies.

D. This Agreement, as amended from time to time, constitutes the entire agreement between the parties with respect to the subject matter hereof and supersedes all previous negotiations, commitments and writings with respect to such subject matter.

E. This Agreement may not be amended except by a writing signed by all parties. Notwithstanding the foregoing, the University may replace the Faculty Mentor, Site Mentor or Capstone Coordinator with individuals other than those named above by giving written notice to the Student.

F. This Agreement may not be assigned in whole or in part without the consent of the other parties. Notwithstanding the foregoing, the University may change the Faculty Mentor or the Capstone Coordinator with the prior written consent of the Site, which shall not be unreasonably withheld or delayed, and the Site may change the Site Mentor with the prior written consent of the University, which shall not be unreasonably withheld or delayed.

G. Nothing in this Agreement shall be construed to create a partnership, joint venture, agency or other relationship between the parties. The relationship between the parties is solely that of independent parties to a contract. Neither party is authorized to act on behalf of or bind the other party.

H. This Agreement shall be solely and exclusively governed by and construed and enforced in accordance with the laws of the Commonwealth of Massachusetts without giving effect to any law that would result in the application of a different body of law. All disputes under or in connection with this Agreement shall be brought and resolved only in a court of competent jurisdiction located in Hampden County, Massachusetts, and each party hereby irrevocably consents to the jurisdiction of such courts and waives any objections thereto.

[SIGNATURE PAGE FOLLOWS]

The Student:
Name: Clara Jayne Davenport, OT/S

Signature:

Western New England University:

Faculty Mentor:

Name: Erin Murray, OT, OTD-PP, OTR/L

Signature: _

Debra Latour PP-OTD, M.Ed., OTR/L
Doctoral Experiential Capstone Coordinator

A. Maria Toyoda, Ph.D.
Provost and Vice President of Academic Affairs

The Site:

Legal name of Site:
Western New England University
Name and title of authorized signatory:

Signature:

Name of Site Mentor:
Nicole Lavery, OTD, OTR/L
Signature:

Appendix B

Doctoral Experiential Capstone Mentorship Agreement

MOU.Appendix A
(E-Portfolio Appendix D)

Department of Occupational Therapy Western New England University
Doctoral Experiential Capstone Mentorship Agreement

Doctoral Student: Clara Jayne Davenport, OT/S
Doctoral Experience Site: Western New England University
Site Mentor: Dr. Nicole Lavery, OTD, OTR/L, CKTP, CEAS
Faculty Mentor: Erin Murray, OT, OTD-PP, OTR/L

This Mentorship Agreement, is effective April 8, 2024, by and between the above named Occupational Therapy Doctoral (OTD) student, Doctoral Experiential Site Mentor, and the Western New England University OTD Faculty Mentor. The following lists the learning objectives for (student), the supervision/mentoring plan, and the responsibilities of all parties involved.

Doctoral Experiential Learning Objectives:

Upon completion of the OT Doctoral Experiential Capstone project, OTD Students will demonstrate, through observed professional interactions and through reflective and professional writing, that they have become self-aware, self-determined learners, competent entry-level practitioners, and transformative leaders, as measured by:

1. Documentation of their experience in collaboration for program or service delivery with professionals and/or members of consumer groups who are not occupational therapists. This includes being able to negotiate the role of occupational therapy as part of an interprofessional team

2. Documentation of a needs assessment for a particular population and using said assessment as the foundation for planning a successful Doctoral Experiential Capstone project. Additional evidence will include feedback from consumers that indicates the impact of the project on the population they represent.

3. Demonstration of proficiency with the use of personal computers, learning platforms, electronic health records and assistive technology sufficient to fully document the Doctoral Experiential for WNE as well as for members of the population served by that project.

4. Recognition and description of the diverse systems of service delivery that are most cost-effective and considerate for health, social, and educational settings, both traditional and nontraditional. Through both clinical and reflective writing, sensitivity to cultural, linguistic, and other diversities and the ability to describe solutions for care disparities.

5. Documentation of the ability to work with others to identify meaningful objectives, organize, manage, and motivate people and resources, communicate effectively, and oversee action to accomplish stated program or service goals.

6. Articulation of the therapeutic/clinical reasoning (procedural, interactive, narrative, ethical, scientific, pragmatic) process used during planning, delivery, and evaluation of population-based and evidence-driven occupational therapy services through both clinical and reflective writing. Demonstration of the ability to implement, in existing programs, and plan for in developing programs, an occupational therapy process that is occupation-based, client-centered, culturally sensitive, and ethically appropriate.

7. Documentation of experiential and scholarly projects that reflect the literature in the field and that use responsive, ethical methods. The scholarly process and results should be accessible to the college and the community, especially to the population served by the project. A report of the project, presented in a professional format that others can replicate or build upon, will be evidence of accomplishment.

8. Articulation of a clear awareness of their own personal and professional strengths and boundaries and identify supports and strategies for goal achievement through both clinical and reflective writing.

Doctoral Experiential Capstone Group and/or Individual Learning Objectives:

WNE OTD students participate in a group mentorship/supervision model in which a small group of students work together with a faculty mentor to develop, implement, and evaluate individual Doctoral Experiential Capstone projects which focus on a specific topic, population, and/or setting. Group objectives, which address the desired outcomes of all of the group members' individual Doctoral Experiential Capstone projects, may be written. These are optional. Individual student learning objectives are written by each student based on a literature review and needs assessment, consultation and planning with their site, faculty, and peer mentors. These objectives are specific to each individual Doctoral Experiential Capstone project. They identify the desired outcomes of this student's Doctoral Experiential Capstone project are:

9. The researcher will demonstrate proficiency in delivering health and wellness education regarding lifting kegs and grain bags in the workplace environment with proper body mechanics/posture through a developed ergonomics program to decrease work-related pain and injury incidence.

10. The researcher will synthesize a systematic review of research on the correlation between poor ergonomics and neuromusculoskeletal pain and injuries, specifically spinal, in order to further knowledge and gain proficiency on the impact of ergonomics on musculoskeletal spinal function.

11. By the end of the ergonomics orientation, participants will display increased knowledge on pain reduction strategies by utilizing proper ergonomics when lifting kegs and grain bags in the workplace environment as measured by pre / post questionnaire.

12. By the end of the ergonomics orientation, participants will identify three strategies to reduce workplace injury utilizing preventative techniques (e.g. stretching, equipment, back brace) as measured by pre / post questionnaire.

Doctoral Experiential Capstone Management/Supervision Plan:

- The student will be mentored and supervised by the site mentor and the faculty mentor.
- The student will only participate in activities as assigned by the site or faculty mentor.
- If the student is providing skilled occupational therapy services, the supervision guidelines for the provision of occupational therapy services by students for each particular state is required.
- If the site mentor is not available to supervise the student on a particular date, the site and mentor will provide a replacement supervisor for that particular time period.
- The student may spend additional time at other locations within the site organization as assigned by the site mentor.
- This is a 560-hour doctoral experience. At least 80% of those hours must be spent at the Doctoral Experiential Capstone project site. Any unexcused absences must be made up to get to 560 hours to ensure successful completion of the doctoral experience. This must be arranged with the site mentor and approved by the faculty mentor.
- Any concerns should be brought to the attention of the faculty or site mentor. If they are not able to be resolved, they should be brought to the attention of Debra Latour, Doctoral Experiential Capstone Coordinator, debra.latour@wne.edu or 413-782-1449.
- Responsibilities of all Parties: Verifying the hours the student completed.

The Doctoral Experiential Capstone Student is responsible to:

- Complete all required academic classes and fieldwork prior to beginning the Community Experiential portion of the Doctoral Experiential Capstone project;
- Develop and maintain a structure for working with their team to conduct and complete their Doctoral Experiential Capstone project. This should include clearly delineated responsibilities and timelines, both individual and group;
- Actively participate in all aspects of the Doctoral Experiential, including:
  - Developing a proposal and work plan;
  - Negotiating a community partnership specific to each individual project;
  - Finding and using appropriate resources;
  - Completing all necessary forms and assurances;
  - Arranging and maintaining communication systems for regular information and consultation with your faculty and community mentor(s);
  - Obtaining IRB review and approval as needed;
  - Collecting, managing, and analyzing of data as proposed;
  - Preparing and presenting a final portfolio format report of project outcomes/findings.
- Arrange for transportation, housing, as needed to conduct the Doctoral Experiential Capstone project;
- Complete 560 hours (14 weeks full-time) of doctoral experience, at least 80% of which (448 hours) must be completed at the doctoral experience site. Any unexcused absences must be made up to get to 560 hours to ensure successful completion of the doctoral experience. This must be arranged with the site mentor and approved by the faculty mentor.

- Comply with all laws, policies, and procedures of the Doctoral Experiential Capstone site, the Doctor of Occupational Therapy Program, Western New England University, state licensure boards, and the American Occupational Therapy Association;
- Demonstrate the standards of professional behavior outlined in this WNE OTD student manual, including HIPAA/FERPA, OSHA, patient rights and the AOTA Code of Ethics;
- Assume a leadership role for the Doctoral Experiential Capstone, demonstrating respectful interaction and communication with fellow students, community partners, faculty and community mentors and other individuals who are part of the Doctoral Experiential;

- Demonstrate a professional approach to the Doctoral Experiential Capstone, including effective time management, observing deadlines, initiating, reading and responding to communications from the Doctoral Experiential Capstone team and other members of the OTD Program and WNE, and taking responsibility for your own skills and career development;
- Evaluate the Doctoral Experiential Capstone supervisors and site to help continue to improve educational outcomes.

The Doctoral Experiential Capstone Faculty Mentor is responsible to:

- Coordinate Doctoral Experiential Capstone group supervision meetings with students who have registered for the assigned Doctoral Mentorship sections
- Oversee the conceptualization and development of each group members Doctoral Experiential Capstone proposal, including oversight, review, final approval and grading of the implementation project;
- Participate in recruitment of and negotiation with community partners regarding site and mentorship agreements and detailed plans for roles, responsibilities, schedules and communication plans for the Doctoral Experiential Capstone project;
- Communicate and provide feedback regularly to the team, especially the students, in person, or via Skype, telephone, email or other methods;
- Collaborate with site mentor and leadership team on any concerns regarding student performance, site management, etc.;
- Oversee the implementation of the Doctoral Experiential Capstone project work plan using evidence-based mentoring and teaching strategies;
- Support, review and finally approve the report and presentation of the project outcomes and findings, and grading of the implementation course.

The Doctoral Experiential Capstone Site Mentor is responsible to:

- Agree to work with Western New England University OTD program, including the identified faculty mentor and OTD student(s) for the duration of the Doctoral Experiential Capstone project, including providing site orientation and delineating mentorship responsibility at their community/agency site location(s);
- Collaborate with the faculty mentor to guide the student(s) through the needs assessment component of the project proposal, to oversee its implementation and to collaborate in managing any problems which may arise;

- Provide guidance on the logistics of completing the Doctoral Experiential Capstone project at the site, including scheduling for the student, on-site support and supervision, and arranging access to necessary resources;
- Collaborate with the faculty mentor to evaluate the student team's on-site performance, and final project report and presentation;
- Actively participate in regular communication with the other OTD students in your group and your faculty mentor in person, virtually (Skype, Adobe Connect, etc.), by email or other means, including giving both verbal and written feedback on implementation and documentation;
- Develop and maintain a system for documenting students' experiential hours on site and the tasks and activities accomplished during those hours (as identified in the work plan);
- Provide a written evaluation (in a format provided by the WNE OTD program) of each student's work, including on and off-site activities for the doctoral experiential, at midterm and at the end of the experiential.

The Doctoral Experiential Capstone Coordinator is responsible to:

- Develop Doctoral Experiential Capstone Policies and Procedures;
- In consultation with the WNE Attorney, develop and negotiate the Doctoral Experiential Memorandum of Understanding/Agreement;
- Review the CV, resume and supporting documents to verify that the site mentor is qualified to serve. This ensures that the student is mentored by an individual with expertise consistent with the student's area of focus. This individual may or may not be an occupational therapist.
- Coordinate and collaborate with University, College, Department, and Program administrators, faculty and staff to assure that the Doctoral Experiential Program follows the appropriate rules and procedures;
- Plan and convene Doctoral Experiential meetings including training;
- Develop and maintain communication systems for collaboration and accountability
- Oversee the Doctoral Mentorship and Experiential courses;
- Oversee the development and presentation of Doctoral Experiential portfolios;
- Evaluate and report the outcomes of the Doctoral Experiential.

By signing the agreement, all parties agree to the provisions above.

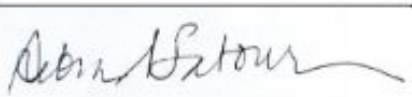
Nicole E. Lavery, OTD, OTR/L 1/18/2024

Dr. Nicole Lavery, OTD, OTR/L, CKTP, CEAS Date

Clara Jayne Davenport, OT/S Date 1/11/2024

Erin Murray, OT, OTD-PP, OTR/L Date 1/11/2024

Debra Latour PP-OTD, M.Ed., OTR/L Date 1/11/2024



Appendix C

Institutional Review Board (IRB) Approval Form

WESTERN NEW ENGLAND UNIVERSITY | WNE
COLLEGE of PHARMACY and HEALTH SCIENCES

Subgroup of the IRB & Human Subjects Committee
FWA00010736 Approval Form&

Responsible Director: _____Dr. Levine _____

Title of Project: Barreling down on ergonomics to increase occupational functioning

College Proposal Number: ___COP-IRB#226

_X____ This research proposal is exempt under Federal Regulation _____*45 CFR 46.104.d.2.i*

It is deemed acceptable according to the Belmont Principles and the American Psychological Association's Ethical Guidelines for the Use of Human Participants for a period of one year.*

_____ This research proposal has undergone an expedited review under Federal Regulation _____. It is deemed acceptable according to the Belmont Principles and the American Psychological Association's Ethical Guidelines for the Use of Human Participants for a period of one year.*

_____ This research does not qualify for exemption or expedited review and will need to be reviewed by the entire board.

Signature__ Monna Levine
_____Date_____5/7/2024_____

Renewal requests due before ___5/7/2025_____

& Note: Authority to approve exempt or expedited research originating within the College of Pharmacy.

* Note: It is your responsibility to notify the IRB of any adverse events that occur during your research. You must also request an additional review before you introduce changes to the proposed protocol. Maintain a copy of your original application, any requested changes, and this signed approval form. You will need to submit these if you apply for a renewal.

Appendix D

IRB Completed Application

WESTERN NEW ENGLAND UNIVERSITY
INSTITUTIONAL REVIEW BOARD (IRB) SUBMISSION FORM
FOR PROPOSAL TO USE HUMAN PARTICIPANTS IN RESEARCH
FWA00010736
Last Modified September 21, 2022

Information regarding the annual meeting schedule of the Institutional Review Board, submission deadlines and requirements, and contact information may be found on the IRB section of the Academic Affairs website located at: https://www1.wne.edu/academic-affairs/institutional-review-board.cfm

Date of Application: (MM/DD/YYYY) 05/06/2024

1. Responsible Project Investigator (Note: students/ residents cannot serve as PIs): Dr. Erin Murray Phone No.: 619-895-0640

Address (Campus address, including box #, if available): 1215 Wilbraham Rd, Springfield, MA 01119 E-mail: erin.murray@wne.edu

2. Investigator (e.g., Graduate Student) (Note: Please list any additional investigators in Appendix): Clara Jayne Davenport Phone No.: 415-806-4032

Address (Campus address, including box #, if available): 1215 Wilbraham Rd, Springfield, Massachusetts 01119 E-mail: clara.davenport@wne.edu

3. Collaborations: Does this project involve any collaborators not part of the faculty/staff at WNEU? ○ No ◉ Yes Please specify: Nicole Lavery, OTD, OTR/L, CKTD, CEAS

4. Title of Project: Barreling Down on Ergonomics to Increase Occupational Functioning

5. Submission Type: ◉ New ○ Renewal ○ Amendment

6. Anticipated Project Duration:

From MM/YYYY: 04/2024 To MM/YYYY: 04/2025

NOTE: Any research project that undergoes full board review and continues for longer than one (1) calendar year requires annual renewal.

7. Non-Technical Synopsis: (Please provide a brief abstract in non-scientific terms.)

This research will focus on ergonomics (the study of body and positioning in the workplace) and individuals working at breweries producing 15,000 or fewer barrels brewed per year. People working in the brewing industry are at an increased risk of workplace injuries such as back pain and sprains that can reduce work efficiency, decrease their quality of life, and hinder their participation in activities of daily living and functional daily tasks. A task analysis will occur at a brewery and then an online ergonomic program will be established which will include stretching/exercising routines, modifications to the daily

8. Background: (Please provide a brief narrative review of the literature and basis of the study.)

While the results of the impact of poor ergonomics on the musculoskeletal system is a well-researched topic, few programs have been implemented in the brewery industry setting to improve ergonomic conditions. Since 2013 around 6,000 new breweries have opened in America and the brewing industry currently employs 2.0 million individuals (John Dunham & Associates, 2021). In 2022, the American Journal of Occupational Therapy published a study that found that brewers in America felt that workplace safety hazards increased likelihood of injury due to improper ergonomics and negatively

9. Objective: (Briefly state the objective of the research.)

The researcher's aim is to examine whether the effectiveness of ergonomic education will decrease musculoskeletal injuries and symptoms in the brewery industry to improve brewers' engagement with ADLs and IADLs, as well as quality of life. The expected benefit is to create a curated ergonomics program that is virtually accessible and free of charge, to provide further research on the topic for future ergonomic programs, and to bring

10. Type of research participant (Include all that apply.) **Indicate the approximate number in each category.**

Undergraduate WNE student (18 years old or older) #	0	Undergraduate WNE student (less than 18 years old) #	0	Graduate or Law WNE student #	0
WNE employee (18 years old or older) #	0	WNE employee (less than 18 years old) #	0	Minor not otherwise specified (less than 18) #	0

Off-campus participants (specify including age and #): 18-105 years old maximum of 500 participants

Special population (e.g., prisoner, pregnant, disabled) (specify including age and #): 0

Other (specify including age and #): 0

11. Recruitment of participants (Check all that apply.)

- [ ] Unpaid classroom volunteer
- [ ] Paid classroom volunteer
- [x] Unpaid nonclassroom volunteer
- [ ] Paid nonclassroom volunteer
- [ ] Other (Please specify)

How will participants be recruited (please attach any flyers, email content, etc.)? Please list all inclusion/exclusion criteria.

Participants for the survey (see Appendix A for recruitment email) and the virtual education modules (see Appendix L for recruitment email) will be recruited by emailing the state brewers' guilds and requesting they forward the survey and modules to their members. Participants for the activity analysis will be recruited in person (see Appendix K for verbal transcript) after receiving consent from the brewery owners to recruit at their place o

12. Expected study duration and compensation.

Expected Duration (e.g., total hours and length of involvment (days, months) per participant):

The maximum duration for each participant for the task analysis is 30 minutes.
The maximum duration for each participant to complete the survey is 15 minutes.
The maximum duration for each participants in completing the ergonomic modules and pre/post test surveys is 75 minutes

Expected participant compensation (Check all that apply.)

- [x] No compensation
- [ ] $$ compensation
- [ ] Other (Please specify)

If applicable, please specify $$ rate

13. Location of the research (Check all that apply)

- [x] On-campus
- [ ] On-Line
- [x] Off-Campus

Please specify site (e.g., Springfield campus, Southborough, specific off-campus location)

[redacted] Brewing Company, Western New England University, Google Forms

Note: If off-campus locations are included, please attach a signed permission from a responsible individual (e.g., business owner, school superintendent, principal) for each location.

14. Will the participants be exposed to more than minimal risk?

- ( ) Yes
- (•) No

Please briefly describe any anticipated risks, discomforts, or inconveniences related to participation, and what will be done to minimize these.

Participants will not be exposed to any risks in this study. As written in the Consent Forms (see appendix B, F, & G), participation in this study is voluntary and you may refuse to take part in the research or withdraw at any time without penalty.

15. Describe consent and/or procedure (attach copies of written informed consent form or information sheet and use consent form checklist to ensure that it contains required elements). Who is obtaining consent? Where and when will it be obtained? How will it be obtained from non-English speakers, if relevant? **Attach copies of consent and assent forms.**

There are three consent forms. The first is Informed Consent for participants of the survey (Appendix G), the second is an Informed Consent for participants of the task analysis (Appendix F), and the third is an Informed Consent for participants of the ergonomic educational program (Appendix C). In the consent forms, there is a section on risks, including feelings of distress, discomfort, and fatigue. Participants have the right to refuse to

16. Confidentiality and anonymity of information obtained (Check all that apply)

☑ Participants' responses will be anonymous. (Data are collected in a way that no one (including the researcher) can identify the individual associated with any particular result or response, e.g., a survey with no names or other identifying information.)

☑ Participants' responses will be confidential. (Records are maintained in a way that ensures only the researchers have access to any information or results linked to a specific individual.)

☐ Other (Please specify)

17. Does the research involve the use of deception?

○ Yes ◉ No

If "Yes" please elaborate in the space below, describing the deception used and providing a justification of the need for deception.

18. Does the research involve debriefing of participants?

○ Yes ◉ No

If "Yes" please provide an explanation in the space below describing how (e.g., spoken, with written statement) and when the participants will be debriefed. If "No" please provide an explanation of why debriefing is not necessary. Provide a copy of the debriefing statement as an attachment, if relevant.

Participants will not be debriefed due to time constraints.

19. Data collection methods: Describe data collection methods to be used (e.g., survey instruments - **copies must be submitted as attachments**), the types of data to be collected (e.g., electronic, hard copy, video), where it will be stored and for how long, who will have access to the data and any security protections that will be put in place.

A mixed methods survey (Appendix H for survey) will be delivered electronically to the emails of the state guilds (see Appendix B for list of emails) after giving consent (Appendix G). Information gathered from this survey will include current knowledge of use of proper body mechanics in the workplace and areas where brewery workers feel like they need more information/knowledge. The researchers will code the survey to identify common themes and use this information to develop educational modules.

Task analyses will be performed at Kismet Brewing Company (see Appendix E for letter of support from the brewery & Appendix F for Informed Consent) in order to gain information on daily work-related tasks at breweries and improve the researchers' understanding of the ergonomic components. There will be no direct contact with the participants after signing the consent form and this information will be applied to the educational program.

Pre/posttest surveys (see Appendix J for surveys) will be delivered electronically to the emails of the state guilds (See Appendix B for the list of contact information) after providing consent to participate (see Appendix C for Informed Consent). Information gathered from the surveys include current knowledge of use of proper body mechanics in the workplace, current and/or past work-related pain and/or injury, current strategies used in the workplace to reduce injury and/or pain, and activities that are impacted by work-related pain. The researchers will code the surveys to identify common themes and measure the effectiveness of the educational modules.

No names will be recorded on any study documents. Data downloaded from the website for analysis will be stored in electronic form on the researchers' password-protected laptops for six years. The Google Forms data is stored on that website in a password protected site. It will be downloaded to the researchers' password-protected laptops and saved for six years.

20. In the space below, please provide a thorough description of the research procedure(s), including design, what specific procedures will be used in each phase of the study, etc.

The research procedure will include a mixed methods study in which task analyses at a brewery (see Appendix E for Letter of Support with [redacted] Brewing Company) will be performed to observe brewery employees participating in work-related tasks and develop key strategies/modifications that could be implemented into the ergonomic modules based on our observations. Permission to recruit workers to observe from the brewery will be acquired by walking into the brewery or calling over the phone and discussing the project proposal with the owners/managers (see Appendix K for verbal transcript). Participants recruited from the brewery post consent from the owners/managers will be given the consent form so the researchers can perform the activity analysis (see Appendix F).

State guilds will be recruited to forward a survey to their members (Appendix A). The mixed methods survey (see Appendix H) will be delivered electronically to the emails of the state guilds (see Appendix B) after the members consent to participate (Appendix G). The data collected from the survey will be coded to identify common themes and key information to be included in the ergonomic modules. Information gathered will include job position, current level of knowledge on proper body mechanics, and areas where brewery workers feel like they need more information/knowledge. The researchers will code this survey.

The observations at [redacted] Brewing Company and data collected from the survey will be used to develop ergonomic modules. These modules will provide education to participants on how to use proper body mechanics while engaging in work-related tasks to their current job position, as well as environmental modifications. Additionally, they will be educated on preventative interventions to decrease the likelihood of musculoskeletal injury due to repetitive motions and poor ergonomics. Participants will be recruited via email (see Appendix L for email transcript) through the state brewers guilds (see Appendix B for list of state guilds emails for recruitment) to

21. Are you applying for an exemption? (•) Yes ( ) No

NOTE: If "Yes" please submit the Exemption Code # in the space below, citing your specific reason. For a listing of reasons, go to http://www.hhs.gov/ohrp/humansubjects/guidance/45cfr46.html (Refer to 46.104.)

Code 46.104. The research study involves the encouragement of behavior change to improve ergonomics in the brewery industry. Research involves collecting information from the participants through daily data entry into an application.

22. Online Training Requirement
The IRB has a mandatory training requirement prior to protocol approval. Training is conducted through the Collaborative Institutional Training Initiative (CITI) Program. Instructions on how to access this training can be obtained at https://www1.wne.edu/academic-affairs/institutional-review-board.cfm. **Please attach a current copy of your certificate to your application submission.**

23. Assurances:
I certify that I have read and followed the the Belmont Principles (http://www.hhs.gov/ohrp/humansubjects/guidance/belmont.html) and the American Psychological Association's* ethical principles concerning research with human participants (http://www.apa.org/ethics). I will adhere to the policies and procedures explained therein. Should changes in the procedure or consent form described above (or in related documents) become advisable, I will submit them to the IRB for approval. I understand that the responsibility for the ethical conduct of the study rests with the responsible faculty investigator. I agree to report any participant complaints that may arise to the IRB.

NOTE: It is strongly recommended that all researchers consult the education training materials available on human subjects research protection at: http://www.hhs.gov/ohrp.

(*Departments or Colleges/Schools that have established their own Human Subjects Committee may substitute the appropriate professional organization's ethical guidelines for research after approval from the IRB.)

1. Responsible Project Investigator's Signature:		Date 05/06/2024
2. Investigator's Signature, If Different		Date 05/06/2024
3. Investigator's Signature, If Different:		Date 05/06/2024
4. Investigator's Signature, If Different:		Date
5. Investigator's Signature, If Different:		Date

You may not begin conducting any aspect of the proposed study until such time as you have received written approval for the proposal.

Appendix E IRB
IRB Completed Application Appendix

Appendix A
Email Transcript for Participant Recruitment

Dear (insert state guild),

We are occupational therapy doctoral students from Western New England University and we are working towards our doctoral project which focuses on improving ergonomics within the brewery industry. The name of our study is “Barreling Down on Ergonomics to Increase Occupational Functioning”. This project involves the implementation of ergonomic training and education in your workplace through online educational ergonomic modules. This includes education on safety awareness and strategies for engaging in proper body mechanics within your brewing environment. This study has been approved by the Western New England University Institutional Review Board (IRB). All information gathered will be confidential and no names will be included in findings to the public.

We are reaching out to you to ask if you are willing to forward this survey to the members of your guild. Additionally, if you would like more information, please let us know and we will get back to you as soon as possible.

We look forward to hearing back from you. Thank you for your time and assistance with our research.

Best,

Clara Davenport, OT/s
Makayla Descault, OT/s

Appendix B
List of State Guild Contact Information for Recruitment

Name of Brewers Guild	State	Contact
Arizona Craft Brewers Guild	Arizona	info@craftbeeraz.com
Brewers Guild of Alaska	Alaska	https://web.brewersguildofalaska.org/contact
Arkansas Brewers Guild	Arkansas	https://arkansasbrewersguild.com/
California Craft Brewers Association	California	https://web.californiacraftbeer.com/contact/
Colorado Brewers Guild	Colorado	https://coloradobeer.org/contact-us/
CT Brewers Guild	Connecticut	ctbrewersguild@connecticut.beer
Florida Brewers Guild	Florida	membership@flbrewersguild.org
Georgia Craft Brewers Guild	Georgia	https://web.georgiacraftbrewersguild.org/contact
Hawaiian Craft Brewers Guild	Hawaii	https://www.hawaiibeer.org/#ContactUs
Idaho Brewers United	Idaho	IdahoBrewersUnited@gmail.com
Illinois Craft Brewers Guild	Illinois	info@illinoisbeer.com
Brewers of Indiana Guild	Indiana	https://drinkin.beer/contact/
Iowa Brewers Guild	Iowa	iabrewersguildboard@gmail.com
Kansas Craft Brewers Guild	Kansas	https://kansascraftbrewersguild.com/pages/contact-us
Kentucky Guild of Brewers	Kentucky	https://www.kygbrewers.org/contact-us
Louisiana Craft Brewers Guild	Louisiana	info@LaBeer.org
Maine Brewers' Guild	Maine	https://mainebrewersguild.org/about/contact-us/

Brewers Association Of Maryland	Maryland	info@marylandbeer.org
Massachusetts Brewers Guild	Massachusetts	KATIE@MASSBREWERSGUILD.ORG
Michigan Brewers Guild	Michigan	info@michiganbrewersguild.org
Minnesota Craft Brewers Guild	Minnesota	https://www.mncraftbrew.org/contact/
Missouri Craft Brewers Guild	Missouri	https://www.mocraftbeer.com/contact-us.html
Montana Brewers Association	Montana	info@montanabrewers.org
Nebraska Craft Brewers Guild	Nebraska	director@nebraska.beer
Southern Nevada Brewers Guild	Nevada	info@nvbeer.com
New Hampshire BRewers Association	New Hampshire	info@nhbrewers.org
Brewers Guild of New Jersey	New Jersey	alexis@brewersguildnj.com
New Mexico Brewers Guild	New Mexico	director@nmbeer.org
NYC Brewers Guild	New York	https://www.nycbrewed.com/contact
New York State Brewers Association	New York	https://newyorkcraftbeer.com/contact/
North Carolina Craft Brewers Guild	North Carolina	lisa@ncbeer.org
North Dakota Brewers Guild	North Dakota	mike@laughingsunbrewing.com
Ohio Craft Brewers Association	Ohio	https://ohiocraftbeer.org/contact/
Oklahoma Craft Brewers Association	Oklahoma	hello@craftbeerok.org
Oregon Brewers Guild	Oregan	info@oregonbeer.org
Brewers of Pennsylvania	Pennsylvania	https://www.brewersofpa.org/contact/
Pittsburgh Brewers Guild	Pennsylvania	https://pittsburghbreweries.co

		m/
Lancaster County Brewers Guild	Pennsylvania	https://www.lancasterbreweries.org/#contact
Rhode Island Brewers Guild	Rhode Island	info@ribrewersguild.org
South Carolina Brewers Guild	South Carolina	info@scbeer.org
South Dakota Craft Brewers Guild	South Dakota	info@sdcraftbrew.org
TN Craft Brewers Guild	Tennessee	https://tncraftbrewers.org/contact/
Texas Craft Brewers Guild	Texas	https://texascraftbrewersguild.org/contact/
Utah Brewers Guild	Utah	https://utahbrewersguild.org/contact-us
Vermont Brewers Association	Vermont	admin@vermontbrewers.com
Virginia Craft Brewers Guild	Virginia	cbarnett@vacraftbrewersguild.com
WA Brewers Guild	Washington	shawna@washingtonbrewersguild.org
Wisconsin Brewers Guild	Wisconsin	info@wibrewersguild.com
Wyoming Craft Brewers Guild	Wyoming	wyocraftbrewersguild@gmail.com

Appendix C
Informed Consent Form for Educational Program

Western New England University
College of Pharmacy / Health Sciences
Informed Consent Form

Title of Study: Barreling Down on Ergonomics to Increase Occupational Functioning

Primary Investigator/Institution: Dr. Erin Murray, Clara Jayne Davenport, & Makayla Descaults/Western New England University

Introduction
We are inviting you to participate in a research study. This study has been approved by the institutional review board (IRB) at Western New England University (WNEU). You were invited by Clara Davenport and Makayla Descault to participate because you work at or own a brewery. This research consent form explains why this research study is being done, what is involved in participating, the possible risks and benefits of participation, and your rights as a participant in this study. This study will take place from April 2024 to July 2024 in partnership with the Department of Occupational Therapy at the College of Pharmacy & Health Sciences at Western New England University. Please read this form carefully and ask any questions that you may have.

Purpose of the Study
The researcher's aim is to examine the effectiveness of ergonomic education to decrease musculoskeletal injuries and symptoms in the brewery industry in order to improve brewers engagement with activities of daily living and instrumental activities of daily living, as well as quality of life . The expected benefit is to create a curated ergonomics program that is virtually accessible and free of charge, to provide further research on the topic for future ergonomic programs, and to bring awareness to the ergonomic concerns in the brewing community. This will add to the limited existing literature about the use of proper ergonomics in the workplace and how it reduces musculoskeletal concerns for improved occupational functioning within the industry.

Description of the Study Procedures
If you are 18 years old or older, currently employed at a brewery as a brewer or pouring and serving beer, and are willing to participate in the study and agree to participate in this study, you will be asked to take part in an online ergonomic training program where you will complete educational modules related to ergonomics, as well as competency checkpoints throughout the module. These modules will provide education on how to use proper body mechanics while engaging in required work-related tasks, as well as environmental adaptations. In addition, you will be educated on preventative interventions to decrease the likelihood of musculoskeletal injury due to repetitive motions and poor ergonomics. You will be asked to complete a pre and post test survey in order to measure the effectiveness of the program. You will be asked to participate in one educational module specific to your position of work (front of house or back of house) that will take up to 60 minutes to complete. You will have access to the module via delivery of email after completing the pre-test survey. The total maximum duration for each participant is 2 hours.

Risks or Discomforts of the Study

There are risks to participating in any research study. It is unlikely that you will be at risk for any physical or psychological harm as a result of your participation in this study. You may find the questions or the interview to cause distress and/or fatigue. You may decline to answer any questions and you may voice concerns to the investigators at any time.

Benefits of Being in the Study
The benefits of participation is to provide further research on the topic for future ergonomic programs and to bring awareness to the ergonomic concerns in the brewing community. The ergonomic modules will benefit brewery employees by providing preventative education to help decrease likelihood of musculoskeletal injuries and pain due to repetitive motions and poor body mechanics, as well as environmental modifications.You will receive no payment for participating in the study.

Costs of Being in the Study
There will be no cost to you for participating in the study.

Confidentiality
Research studies have a risk for some loss of privacy. To help prevent the loss of privacy, your name and place of work will not be recorded on any study documents. We will assign a research identification number to all participants which will be included in all study documentation. All records will be kept strictly confidential. Electronic files will be password-protected and hard copies will be stored in a locked cabinet for six years. Only the study staff will have access to the files. None of the data that we may publish or present in any reports, presentations, or papers will include any information that can identify you as a participant in this study.

The results of this research study may be published in a medical book or journal, or used to teach others. However, your name or other identifiable information, including place of work, will not be used for these purposes without your specific permission. None of the information that we may publish or present in any reports, presentations, or papers will include information that can identify you as a participant in this study

Right to Refuse or Withdraw
The decision to participate in this study is entirely up to you. You have the right to choose not to sign this form. If you decide not to sign this form, you can still participate, however, you will not be included in the study. You can stop being in the study at any time. Tell the research investigator immediately if you are thinking about stopping or decide to stop. Leaving the research study will not affect your medical care or your relationship with Western New England University.

Right to Ask Questions and Report Concerns
You have the right to ask questions about this research study before, during, or after the research. If you have any questions about the study at any time, please contact Clara Jayne Davenport via telephone number (415) 806-4032, Makayla Descault via telephone number (860) 940-4871, or Dr. Erin Murray via email at erin.murray@wne.edu.

If you wish to speak to the Institutional Review Board (IRB), then please contact Dr. Jessica Carlson, Professor of Psychology and Chair of the WNEU IRB, Jessica.outhouse@wne.edu or via telephone at 413-796-2325 or Dr. Minna Levine, College of Pharmacy / Health Sciences, Member of the IRB at minna.levine@wne.edu. This research project has been reviewed and approved by the Western New England University Institutional Review Board.

Statement of Consent
Your signature indicates that you understand this form and you have decided to volunteer for this study. It also indicates you have read and understood the information provided here. You have had a chance to ask any questions you had. You are 18 years old or older, currently employed at a brewery, and are willing to participate in the study.

ELECTRONIC CONSENT: Please select your choice below. You may print a copy of this

consent form for your records. Clicking on the “Agree” button indicates that

• You have read the above information

• You voluntarily agree to participate

• You are currently employed at a brewery

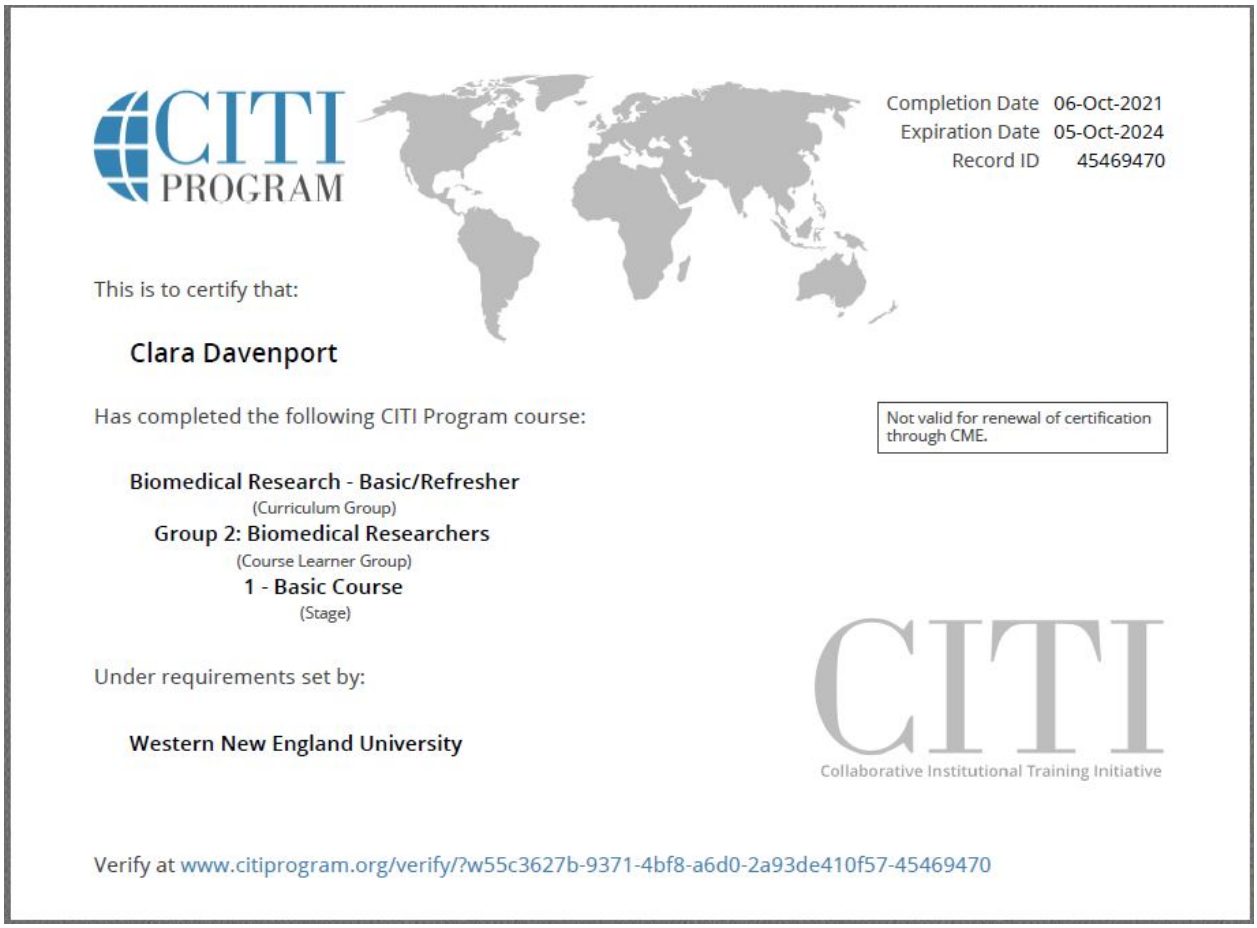
• You are 18 years of age or older

☐ Agree

☐ Disagree

Appendix D

CITI Certification



CITI PROGRAM

Completion Date 06-Oct-2021
Expiration Date 05-Oct-2024
Record ID 45469470

This is to certify that:

Clara Davenport

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

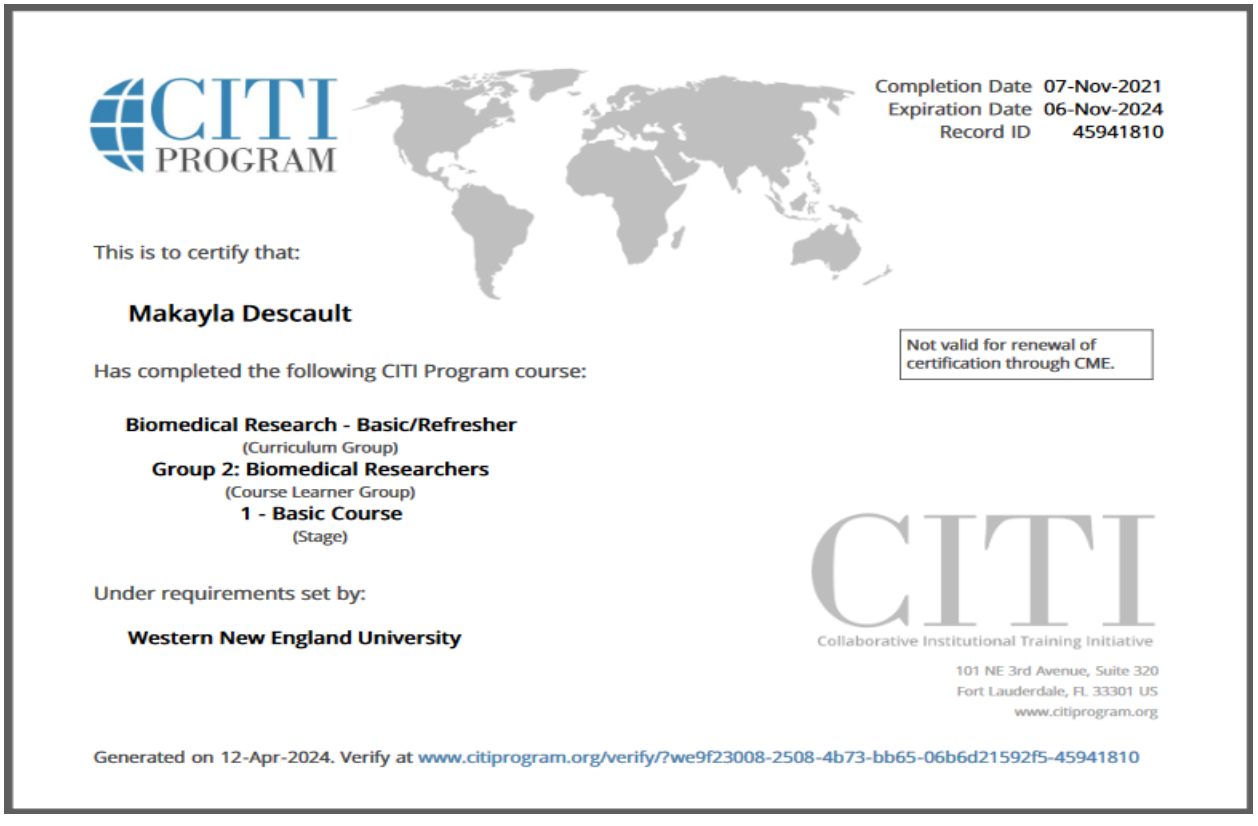
Biomedical Research - Basic/Refresher
(Curriculum Group)
Group 2: Biomedical Researchers
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

Western New England University

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w55c3627b-9371-4bf8-a6d0-2a93de410f57-45469470



CITI PROGRAM

Completion Date 07-Nov-2021
Expiration Date 06-Nov-2024
Record ID 45941810

This is to certify that:

Makayla Descault

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Biomedical Research - Basic/Refresher
(Curriculum Group)
Group 2: Biomedical Researchers
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

Western New England University

CITI
Collaborative Institutional Training Initiative

101 NE 3rd Avenue, Suite 320
Fort Lauderdale, FL 33301 US
www.citiprogram.org

Generated on 12-Apr-2024. Verify at www.citiprogram.org/verify/?we9f23008-2508-4b73-bb65-06b6d21592f5-45941810

CITI PROGRAM

Completion Date 10-Mar-2022
Expiration Date 09-Mar-2025
Record ID 47888790

This is to certify that:

Erin Murray

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Social & Behavioral Research - Basic/Refresher
(Curriculum Group)
Group 3: Social-Behavioral-Educational Researchers
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

Western New England University

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w944ab7ea-14ff-4b05-9230-585f940f5827-47888790

CITI PROGRAM

Completion Date 30-Oct-2021
Expiration Date 29-Oct-2024
Record ID 45828543

This is to certify that:

Nicole Lavery

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Human Subject Research
(Curriculum Group)
CHESS & MCHPS
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

Gannon University

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w344f0c0a-8ad5-4fec-9834-578ba7a8eac3-45828543

Appendix E

Email Letter of Support from [redacted] Brewing Company

From: [redacted]
Sent: Friday, April 26, 2024 10:40 AM
To: Clara Davenport <clara.davenport@wne.edu>
Subject: Re: Reaching out about ergonomic program

Hey Clara!!

So glad to hear from you. Hope all is going well for you two. I would happy to help in any way I can.

Cheers!

[redacted]

On Apr 24, 2024, at 5:07 PM, Clara Davenport <clara.davenport@wne.edu> wrote:

Hello,

My name is Clara. I'm a graduate student for an occupational therapy program at Western New England University and we had discussed [redacted] Brewing participating in Makayla and my research and educational program on ergonomics in breweries. If you're still interested we would like to work with you. The project would be started as soon as the IRB is approved and plan to be completed mid July.

Let me know what you think and if you have any questions.

Thank you!

Clara Jayne Davenport, OT/s
Makayla Descault, OT/s

Appendix F

Informed Consent Form for Participants in Task Analysis at _____ Brewing Company

Western New England University
College of Pharmacy / Health Sciences
Informed Consent Form

Title of Study: Barreling Down on Ergonomics to Increase Occupational Functioning

Primary Investigator/Institution: Dr. Erin Murray, Clara Jayne Davenport, & Makayla Descaults/Western New England University

Introduction

We are inviting you to participate in a research study. This study has been approved by the institutional review board (IRB) at Western New England University (WNEU). You were invited by Clara Davenport and Makayla Descault to participate because you work at or own a brewery. This research consent form explains why this research study is being done, what is involved in participating, the possible risks and benefits of participation, and your rights as a participant in this study. This study will take place from April 2024 to July 2024 in partnership with the Department of Occupational Therapy at the College of Pharmacy & Health Sciences at Western New England University. Please read this form carefully and ask any questions that you may have.

Purpose of the Study

The researcher's aim is to examine the effectiveness of ergonomic education to decrease musculoskeletal injuries and symptoms in the brewery industry in order to improve brewers engagement with activities of daily living and instrumental activities of daily living, as well as quality of life . The expected benefit is to create a curated ergonomics program that is virtually accessible and free of charge, to provide further research on the topic for future ergonomic programs, and to bring awareness to the ergonomic concerns in the brewing community. This will add to the limited existing literature about the use of proper ergonomics in the workplace and how it reduces musculoskeletal concerns for improved occupational functioning within the industry.

Description of the Study Procedures

If you are 18 years old or older, currently employed at a brewery as a brewer or pouring and serving beer, and are willing to participate in the study and agree to participate in this study, the researchers' will perform a task analysis (breakdown of task/activity into each step) by observing you engaging in daily work-related tasks for up to 30 minutes. There will be no direct impact on your daily work schedule or tasks.

Risks or Discomforts of the Study

There are risks to participating in any research study. It is unlikely that you will be at risk for any physical or psychological harm as a result of your participation in this study. You may voice concerns to the investigators at any time. Individuals have the right to refuse or withdraw from participating at any time.

Benefits of Being in the Study

The benefits of participation is to provide further research on the topic for future ergonomic programs and to bring awareness to the ergonomic concerns in the brewing community. The ergonomic modules will benefit

brewery employees by providing preventative education to help decrease likelihood of musculoskeletal injuries and pain due to repetitive motions and poor body mechanics, as well as environmental modifications.You will receive no payment for participating in the study.

Costs of Being in the Study
There will be no cost to you for participating in the study.

Confidentiality
Research studies have a risk for some loss of privacy. To help prevent the loss of privacy, your name and place of work will not be recorded on any study documents. We will assign a research identification number to all participants which will be included in all study documentation. All records will be kept strictly confidential. Electronic files will be password-protected and hard copies will be stored in a locked cabinet for six years. Only the study staff will have access to the files. None of the data that we may publish or present in any reports, presentations, or papers will include any information that can identify you as a participant in this study.

The results of this research study may be published in a medical book or journal, or used to teach others. However, your name or other identifiable information, including place of work, will not be used for these purposes without your specific permission. None of the information that we may publish or present in any reports, presentations, or papers will include information that can identify you as a participant in this study

Right to Refuse or Withdraw
The decision to participate in this study is entirely up to you. You have the right to choose not to sign this form. If you decide not to sign this form, you can still participate, however, you will not be included in the study. You can stop being in the study at any time. Tell the research investigator immediately if you are thinking about stopping or decide to stop. Leaving the research study will not affect your medical care or your relationship with Western New England University.

Right to Ask Questions and Report Concerns
You have the right to ask questions about this research study before, during, or after the research. If you have any questions about the study at any time, please contact Clara Jayne Davenport via telephone number (415) 806-4032, Makayla Descault via telephone number (860) 940-4871, or Dr. Erin Murray via email at erin.murray@wne.edu.

If you wish to speak to the Institutional Review Board (IRB), then please contact Dr. Jessica Carlson, Professor of Psychology and Chair of the WNEU IRB, Jessica.outhouse@wne.edu or via telephone at 413-796-2325 or Dr. Minna Levine, College of Pharmacy / Health Sciences, Member of the IRB at minna.levine@wne.edu. This research project has been reviewed and approved by the Western New England University Institutional Review Board.

Statement of Consent
Your signature indicates that you understand this form and you have decided to volunteer for this study. It also indicates you have read and understood the information provided here. You have had a chance to ask any questions you had. You are 18 years old or older, currently employed at a brewery, and are willing to participate in the study.

ELECTRONIC CONSENT: Please select your choice below. You may print a copy of this

consent form for your records. Clicking on the “Agree” button indicates that

• You have read the above information

• You voluntarily agree to participate

• You are currently employed at a brewery

• You are 18 years of age or older

☐ Agree

☐ Disagree

Appendix G

Informed Consent Consent Form for Survey

Western New England University
College of Pharmacy / Health Sciences
Informed Consent Form

Title of Study: Barreling Down on Ergonomics to Increase Occupational Functioning

Primary Investigator/Institution: Dr. Erin Murray, Clara Jayne Davenport, & Makayla Descaults/Western New England University

Introduction
We are inviting you to participate in a research study. This study has been approved by the institutional review board (IRB) at Western New England University (WNEU). You were invited by Clara Davenport and Makayla Descault to participate because you work at or own a brewery. This research consent form explains why this research study is being done, what is involved in participating, the possible risks and benefits of participation, and your rights as a participant in this study. This study will take place from April 2024 to July 2024 in partnership with the Department of Occupational Therapy at the College of Pharmacy & Health Sciences at Western New England University. Please read this form carefully and ask any questions that you may have.

Purpose of the Study
The researcher's aim is to examine the effectiveness of ergonomic education to decrease musculoskeletal injuries and symptoms in the brewery industry in order to improve brewers engagement with activities of daily living and instrumental activities of daily living, as well as quality of life . The expected benefit is to create a curated ergonomics program that is virtually accessible and free of charge, to provide further research on the topic for future ergonomic programs, and to bring awareness to the ergonomic concerns in the brewing community. This will add to the limited existing literature about the use of proper ergonomics in the workplace and how it reduces musculoskeletal concerns for improved occupational functioning within the industry.

Description of the Study Procedures
If you are 18 years old or older, currently employed at a brewery as a brewer or pouring and serving beer, and are willing to participate in the study and agree to participate in this study, you will be asked to complete a 10 question survey related to your knowledge of proper body mechanics and its impact on both your work performance and engagement of activities outside of work. The survey will take each participant a maximum of 15 minutes to complete.

Risks or Discomforts of the Study
There are risks to participating in any research study. It is unlikely that you will be at risk for any physical or psychological harm as a result of your participation in this study. You may voice concerns to the investigators at any time. Individuals have the right to refuse or withdraw from participating at any time.

Benefits of Being in the Study
The benefits of participation is to provide further research on the topic for future ergonomic programs and to

bring awareness to the ergonomic concerns in the brewing community. The ergonomic modules will benefit brewery employees by providing preventative education to help decrease likelihood of musculoskeletal injuries and pain due to repetitive motions and poor body mechanics, as well as environmental modifications.You will receive no payment for participating in the study.

Costs of Being in the Study
There will be no cost to you for participating in the study.

Confidentiality
Research studies have a risk for some loss of privacy. To help prevent the loss of privacy, your name and place of work will not be recorded on any study documents. We will assign a research identification number to all participants which will be included in all study documentation. All records will be kept strictly confidential. Electronic files will be password-protected and hard copies will be stored in a locked cabinet for six years. Only the study staff will have access to the files. None of the data that we may publish or present in any reports, presentations, or papers will include any information that can identify you as a participant in this study.

The results of this research study may be published in a medical book or journal, or used to teach others. However, your name or other identifiable information, including place of work, will not be used for these purposes without your specific permission. None of the information that we may publish or present in any reports, presentations, or papers will include information that can identify you as a participant in this study

Right to Refuse or Withdraw
The decision to participate in this study is entirely up to you. You have the right to choose not to sign this form. If you decide not to sign this form, you can still participate, however, you will not be included in the study. You can stop being in the study at any time. Tell the research investigator immediately if you are thinking about stopping or decide to stop. Leaving the research study will not affect your medical care or your relationship with Western New England University.

Right to Ask Questions and Report Concerns
You have the right to ask questions about this research study before, during, or after the research. If you have any questions about the study at any time, please contact Clara Jayne Davenport via telephone number (415) 806-4032, Makayla Descault via telephone number (860) 940-4871, or Dr. Erin Murray via email at erin.murray@wne.edu.

If you wish to speak to the Institutional Review Board (IRB), then please contact Dr. Jessica Carlson, Professor of Psychology and Chair of the WNEU IRB, Jessica.outhouse@wne.edu or via telephone at 413-796-2325 or Dr. Minna Levine, College of Pharmacy / Health Sciences, Member of the IRB at minna.levine@wne.edu. This research project has been reviewed and approved by the Western New England University Institutional Review Board.

Statement of Consent
Your signature indicates that you understand this form and you have decided to volunteer for this study. It also indicates you have read and understood the information provided here. You have had a chance to ask any questions you had. You are 18 years old or older, currently employed at a brewery, and are willing to participate in the study.

ELECTRONIC CONSENT: Please select your choice below. You may print a copy of this consent form for your records. Clicking on the “Agree” button indicates that

• You have read the above information

• You voluntarily agree to participate

• You are currently employed at a brewery

• You are 18 years of age or older

☐ Agree

☐ Disagree

Appendix H

Survey for Data Collection to Develop Ergonomic Modules

1. Are you over 18 years old?
    a. Yes
    b. No
2. Approximately how many barrels of beer does your brewery produce per year?
    a. 0-1500 barrels
    b. 1500-5000 barrels
    c. 5000-15000 barrels
    d. 15000 or more barrels
3. What is your current job position at the brewery where you are employed?
    a. Back of house (brewer)
    b. Front of house (bartender or server)
    c. Both front of house and back of house
    d. Other (please specify): _____
4. On a scale of 1-5, with 1 being no knowledge and 5 being very knowledgeable, what is your level of knowledge on the concept of using proper body mechanics while engaging in work-related tasks?
5. Have you received an orientation or training from your employer related to proper body mechanics?
    a. Yes
    b. No
        i. If you did receive a training or orientation, where did it take place?
6. Have you ever worked a shift with an injury/in pain?
    a. Yes
    b. No
7. What strategies do you currently use during working hours in order to improve body mechanics and/or environmental aspects of your job?
    a. Stretching/exercise breaks
    b. Alternating between sitting and standing
    c. Using equipment (e.g. handcart, reacher, etc.) consistently
    d. None
    e. Other: _____
8. Do environmental aspects of your job (e.g. placement of glassware, location of grain bags) impact work performance and/or cause/increase pain?
    a. Yes
    b. No
        i. If yes, which environmental aspects impact work performance and/or increase/cause pain?
            1. Placement of items such as glassware
            2. Location of machinery (e.g. draft beer dispenser, fermentation tank)
            3. Location of heavy objects (e.g. kegs)
            4. Type of flooring (e.g. hardwood floor vs floor mats)
            5. Other: _____
9. Does work-related pain/injury impact your engagement in activities outside of work?
    a. Yes
    b. No

        i. If yes, please select all activities that are impacted:
            1. Dressing self
            2. Bathing/showering
            3. Hobbies or leisure activities
            4. Rest and sleeping
            5. Mobility (e.g. walking, sitting to standing)
            6. Other (please specify): _____

10. Please identify all of the areas in which you feel you need information/strategies related to use of proper body mechanics in your work setting:
    a. Lifting/carrying heavy objects
    b. Reaching above shoulder height
    c. Stretching/exercises
    d. Other (please specify): _____
11. Please include any additional thoughts/comments here:

Appendix I

Additional Investigator

Name: Makayla Descault

Phone number: (860) 940-4871

Address: 1215 Wilbraham Rd, Springfield, Massachusetts 01119

Email: Makayla.Descault@wne.edu

Name: Nicole Lavery

Phone Number: (814) 450-7169

Address: 109 University Square, Erie, PA 16541

Email: lavery003@gannon.edu

Appendix J

Pre/Post Test Survey

Pretest:

1. Of the following, approximately how many barrels of beer does your brewery produce per year?
    a. 0-1500 barrels
    b. 1500-5000 barrels
    c. 5000-15000 barrels
    d. 15000 or more barrels
2. What is your job position at the brewery you are currently employed at?
    a. Back of house (brewer)
    b. Front of house (bartender or server)
    c. Both (front of house and back of house)
    d. Other (please specify): _____
3. Do you currently or have you in the past experienced work-related pain/injury?
    a. Yes
    b. No
        i. If yes, on a scale of 0-10, what is/was your average level of pain throughout your work day?
        ii. If yes, do any of the following activities exacerbate your pain?
            1. Lifting
            2. Prolonged standing
            3. Reaching above your shoulders
            4. Other (please specify): _____
        iii. If yes, where was/is the location of your pain?
            1. Lower back
            2. Shoulders
            3. Wrist/hand
            4. Other (please specify): _____
4. Has your work-related pain or injury ever impacted your engagement/participation in your work routine?
    a. Yes
    b. No
        i. If yes, what activities have been impacted due to work-related pain?
            1. Lifting 50 lbs or more
            2. Reaching above your shoulders
            3. Prolonged standing
            4. Other (please specify): _____
5. Has your work-related pain or injury ever impacted your engagement in activities outside of work?
    a. Yes
    b. No
        i. If yes, what activities have been impacted due to work-related pain?
            1. Getting dressed
            2. Bathing/grooming tasks
            3. Cooking/preparing meals

4. Other (please specify): _____

6. Are there any strategies or techniques you have used to decrease your pain during work?
    a. Yes
    b. No
        i. If yes, what strategies/techniques have you used?
            1. Taking standing/walking breaks
            2. Stretching/exercise
            3. Use of equipment such as floor mats or adjustable chairs/tables
            4. Other (please specify): _____
        ii. If yes, how often did you engage in those strategies?
            1. Every 30 minutes
            2. Every 60 minutes
            3. Only during my lunch break time
            4. Other (please specify): _____
7. On a scale of 1-5, with 1 being no knowledge and 5 being very knowledgeable, what is your level of knowledge on the concept of using correct body mechanics while engaging in work-related tasks?
8. On a scale of 1-5, with 1 being never and 5 being always, how frequently do you consider proper body mechanics when engaging in work-related tasks?

Posttest:

Questions will be measured on scale of 1-5 with 1 being least and 5 being most

1. On a scale of 1-5, with 1 being no knowledge and 5 being very knowledgeable, after completing the educational program, what is your level of knowledge on the concept of using correct body mechanics while engaging in work-related tasks?
2. On a scale of 1-5, with 1 being not significant at all and 5 being very significant, how applicable do you feel the information provided in the educational modules relates to your everyday job routine?
3. On a scale of 1-5, with 1 being never and 5 being always, how likely do you think you will apply this information to your everyday job routine?

Appendix K
Verbal Transcript for Participant Recruitment in Task Analysis

Hello, my name is Makayla **OR** Clara. I am an occupational therapy student at Western New England University in Springfield, Massachusetts. I came to visit today to ask if your brewery would be interested in joining an ergonomic program that my classmate and I are planning for our doctorale capstone. We have been doing research on common injuries for people working in the food service industry and found that there is less information on brewers and their staff. We are hoping to complete a task analysis (breakdown of task/activity into each step) of your brewery and staff in order to obtain information for our research project related to possible recommendations that can improve staff health and reduce the likelihood of further injuries in the future. Studies have shown that improving ergonomic workplaces can improve productivity and reduce call outs. This would be free for your organization and results would be shared with you and your team. If you are interested in learning more, my email is clara.davenport@wne.edu **OR** makayla.descaults@wne.edu.

Appendix L

Email Transcript for Participant Recruitment for Educational Modules

Dear (insert state guild),

Hello again, thank you for forwarding our survey to your guild members. As a reminder, our names are Clara and Makayla and we are occupational therapy doctoral students from Western New England University. The name of our study is “Barreling Down on Ergonomics to Increase Occupational Functioning”. This project involves the implementation of ergonomic training and education in your workplace through online educational ergonomic modules. This includes education on safety awareness and strategies for engaging in proper body mechanics within your brewing environment. Attached is a link to the educational modules on body mechanics for both servers/bartenders and brewers working at breweries. We would appreciate it if you could forward this email to the breweries in your guild. The modules should take no more than 30 minutes.

[insert link here]

This study has been approved by the Western New England University Institutional Review Board (IRB). All information gathered will be confidential and no names will be included in findings to the public.

We look forward to hearing back from you. Thank you for your time and assistance with our research. If you have any questions or concerns, please let us know.

Best,

Clara Davenport, OT/s

Makayla Descault, OT/s

Appendix E

IRB Ammendment Form

AMENDMENT FORM

If you change anything about your methods, the people working on the project, or the participants involved, you need to submit an Amendment form.

Western New England University IRB and Human Subjects

Committee AMENDMENT

Form FWA00010736

Any change to an approved research protocol, including research plan, consent process and form, co-investigators, other research personnel, and/or methods of subject recruitment, requires submission of an Amendment. Attach a detailed explanation of the reason(s) you are seeking to modify your previously approved research project. Also attach any revised instruments, questionnaires, letters of cooperation, informed consent forms, etc.

Amendments to protocols may not be initiated until IRB approval has been obtained.

Protocol Number: COP-IRB #226

Protocol Title: Barreling Down on Ergonomics to Increase Occupational Functioning

Responsible Project Investigator: Erin Murray, Clara Jayne Davenport, Makayla Descault

The following change(s) is/are being proposed for the above protocol:

__ Title change

__ Addition or removal of PI, co-PI, or key personnel

_X_ Addition, deletion, or change of recruitment instrument, oral script, survey instrument, web-based instruments, questionnaires, advertisement flyers, funding sources etc. Please attach changed documents.

__ Addition or deletion of cooperating institutions

__ Change in number of participants

__ Change in study population

__ Revised Informed Consent Form. Please attach.

__ Change in Methodology

__ Other, explain:_____

Summary of Changes:

The above proposal indicates that there is an addition to our survey. We are including gender identification demographic question (see #4 in the attached document). The addition of this question is due to a recommendation from our site mentor who is a brewery owner. Gender is a relevant consideration for ergonomics and body mechanics when considering types of injuries.

INSTITUTIONAL REVIEW BOARD ACTION

X Certified as Exempt from Review

__ Approved under Expedited Review

__ Approved by the Full Board

Mona Levine 5/8/2024

IRB Representative's Signature Date

Appendix H

Survey for Data Collection to Develop Ergonomic Modules

1. What state is your brewer located in?
2. What is the categorization of the brewery you currently work for?
    a. Taphouse
    b. Microbrewery
    c. Brewpub
    d. Regional brewery
    e. Large brewery
    f. Other:
3. What is your current job position at the brewery where you are employed?
    a. Back of house (brewer)
    b. Front of house (bartender or server)
    c. Both front of house and back of house
    d. Other (please specify):
4. What is your gender identification?
    a. Male
    b. Female
    c. Prefer not to answer
    d. Other:
5. On a scale of 1-5, with 1 being no knowledge and 5 being very knowledgeable, what is your level of knowledge on the concept of using proper body mechanics (the way you move to maintain balance, posture, and alignment) while engaging in work-related tasks?
6. Have you received an orientation or training from your employer related to proper body mechanics?
    a. Yes
    b. No
        i. If you replied yes to the above question and did receive a training or orientation, where did it take place?
7. Have you ever had to complete work tasks while injured and/or in pain?
    a. Yes
    b. No
8. What strategies do you currently use during working hours in order to improve body mechanics?
    a. Stretching
    b. Exercise breaks every 30 minutes if completing repetitive task
    c. Alternating between sitting and standing
    d. Using equipment (e.g. handcart, reacher, etc.) consistently
    e. Using proper lifting techniques
    f. None
    g. Other:
9. What strategies do you currently use during working hours in order to improve environmental aspects of your job?
    a. Use of gloves
    b. Keg dolly's

c. Pallet jacks
d. Table/production lines at waist height
e. None
f. Other:

10. Do environmental aspects of your job (e.g. placement of glassware, location of grain bags) impact work performance and/or cause/increase pain?
    a. Yes
    b. No
        i. If you replied yes to the above question, which environmental aspects impact work performance and/or increase/cause pain?
            1. Placement of items such as glassware
            2. Location of machinery (e.g. draft beer dispenser, fermentation tank, grain mills, canning/bottling lines. Packing stations)
            3. Location of heavy objects (e.g. kegs)
            4. Type of flooring (e.g. hardwood floor vs floor mats)
            5. Other:
11. Does work-related pain/injury impact your engagement in activities outside of work?
    a. Yes
    b. No
        i. If you replied yes to the previous question, please select all activities that are impacted:
            1. Dressing self
            2. Bathing/showering
            3. Hobbies or leisure activities
            4. Rest and sleeping
            5. Mobility (e.g. walking, sitting to standing)
            6. Other (please specify):
12. Please identify all of the areas in which you feel you need information/strategies related to use of proper body mechanics in your work setting:
    a. Lifting/carrying heavy objects
    b. Reaching above shoulder height
    c. Stretching/exercises
    d. Environmental design
    e. Other (please specify):
13. Please include any additional thoughts/comments here:
14. If you are interested in completing a free body mechanics course which takes no more than 30 minutes, please fill in your email below:

Appendix F

Survey Results

Thank you for participating in this survey. Below is a consent form. There will be no personal or identifying information gathered from this survey. After pressing "agree" you will have access to the survey which should take no more than 15 minutes to complete.

Informed Consent

Title of Study: Barreling Down on Ergonomics to Increase Occupational Functioning

Primary Investigator/Institution: Dr. Erin Murray, Clara Jayne Davenport, & Makayla Descault/Western New England University

Introduction

We are inviting you to participate in a research study. This study has been approved by the institutional review board (IRB) at Western New England University (WNEU). You were invited by Clara Davenport and Makayla Descault to participate because you work at or own a brewery. This research consent form explains why this research study is being done, what is involved in participating, the possible risks and benefits of participation, and your rights as a participant in this study. This study will take place from April 2024 to July 2024 in partnership with the Department of Occupational Therapy at the College of Pharmacy & Health Sciences at Western New England University. Please read this form carefully and ask any questions that you may have.

Purpose of the Study

The researcher's aim is to examine the effectiveness of ergonomic education to decrease musculoskeletal injuries and symptoms in the brewery industry in order to improve brewers engagement with activities of daily living and instrumental activities of daily living, as well as quality of life . The expected benefit is to create a curated ergonomics program that is virtually accessible and free of charge, to provide further research on the topic for future ergonomic programs, and to bring awareness to the ergonomic concerns in the brewing community. This will add to the limited existing literature about the use of proper ergonomics in the workplace and how it reduces musculoskeletal concerns for improved occupational functioning within the industry.

Description of the Study Procedures

If you are 18 years old or older, currently employed at a brewery as a brewer or pouring and serving beer, and are willing to participate in the study and agree to participate in this study, you will be asked to complete a 10 question survey related to your knowledge of proper body mechanics and its impact on both your work performance and engagement of activities outside of work. The survey will take each participant a maximum of 15 minutes to complete.

Risks or Discomforts of the Study

There are risks to participating in any research study. It is unlikely that you will be at risk for any physical or psychological harm as a result of your participation in this study. You may voice concerns to the investigators at any time. Individuals have the right to refuse or withdraw from participating at any time.

Benefits of Being in the Study

The benefits of participation is to provide further research on the topic for future ergonomic programs and to bring awareness to the ergonomic concerns in the brewing community. The ergonomic modules will benefit brewery employees by providing preventative education to help decrease likelihood of musculoskeletal injuries and pain due to repetitive motions and poor body mechanics, as well as environmental modifications. You will receive no payment for participating in the study.

Costs of Being in the Study

There will be no cost to you for participating in the study.

Confidentiality

Research studies have a risk for some loss of privacy. To help prevent the loss of privacy, your name and place of work will not be recorded on any study documents. We will assign a research identification number to all participants which will be included in all study documentation. All records will be kept strictly confidential. Electronic files will be password-protected and hard copies will be stored in a locked cabinet for six years. Only the study staff will have access to the files. None of the data that we may publish or present in any reports, presentations, or papers will include any information that can identify you as a participant in this study.

The results of this research study may be published in a medical book or journal, or used to teach others. However, your name or other identifiable information, including place of work, will not be used for these purposes without your specific permission. None of the information

that we may publish or present in any reports, presentations, or papers will include information that can identify you as a participant in this study

Right to Refuse or Withdraw

The decision to participate in this study is entirely up to you. You have the right to choose not to sign this form. If you decide not to sign this form, you can still participate, however, you will not be included in the study. You can stop being in the study at any time. Tell the research investigator immediately if you are thinking about stopping or decide to stop. Leaving the research study will not affect your medical care or your relationship with Western New England University.

Right to Ask Questions and Report Concerns

You have the right to ask questions about this research study before, during, or after the research. If you have any questions about the study at any time, please contact Clara Jayne Davenport via telephone number (415) 806-4032, Makayla Descault via telephone number (860) 940-4871, or Dr. Erin Murray via email at erin.murray@wne.edu.

If you wish to speak to the Institutional Review Board (IRB), then please contact Dr. Jessica Carlson, Professor of Psychology and Chair of the WNEU IRB, Jessica.outhouse@wne.edu or via telephone at 413-796-2325 or Dr. Minna Levine, College of Pharmacy / Health Sciences, Member of the IRB at minna.levine@wne.edu. This research project has been reviewed and approved by the Western New England University Institutional Review Board.

Statement of Consent

Your signature indicates that you understand this form and you have decided to volunteer for this study. It also indicates you have read and understood the information provided here. You have had a chance to ask any questions you had. You are 18 years old or older, currently employed at a brewery, and are willing to participate in the study.

ELECTRONIC CONSENT: Please select your choice below. You may print a copy of this consent form for your records. Clicking on the “Agree” button indicates that

• You have read the above information

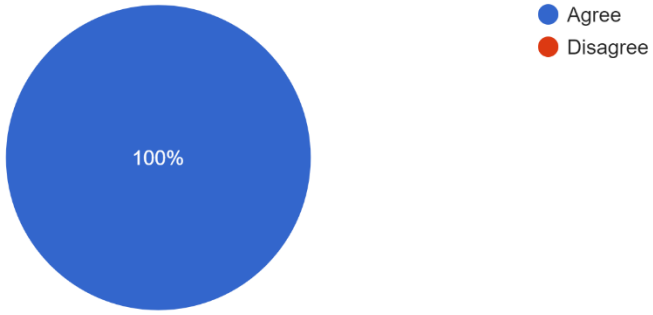
• You voluntarily agree to participate

• You are currently employed at a brewery

• You are 18 years of age or older

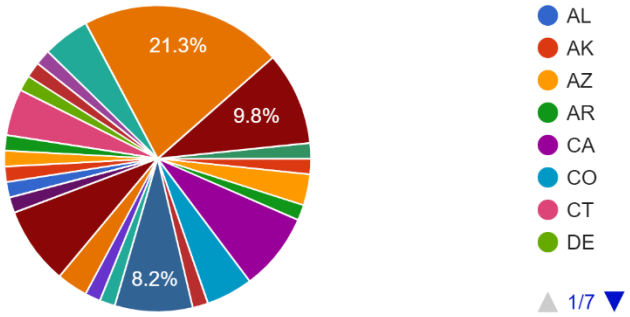
Informed Consent Title of Study: Barreling Down on Ergonomics to Increase Occupational Functioning Primary Investigator/Institution: Dr. Er...d at a brewery • You are 18 years of age or older

61 responses



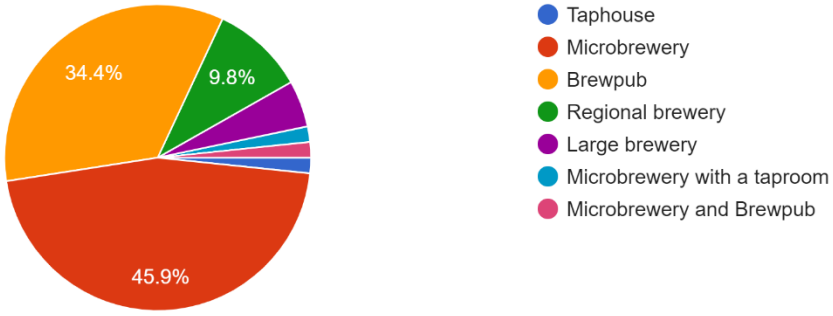
What state is your brewer located in?

61 responses



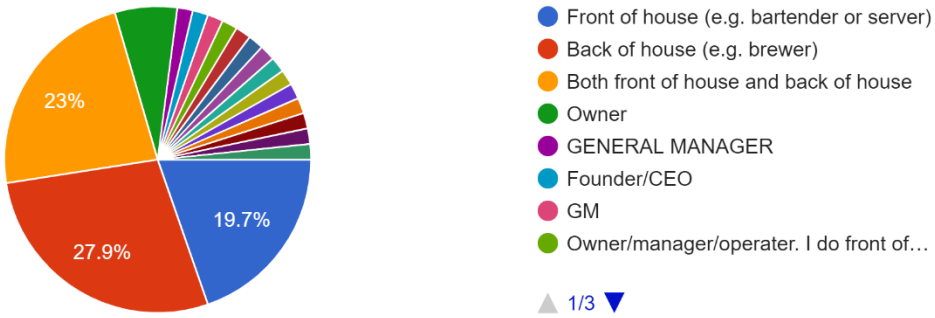
What is the categorization of the brewery you currently work for?

61 responses



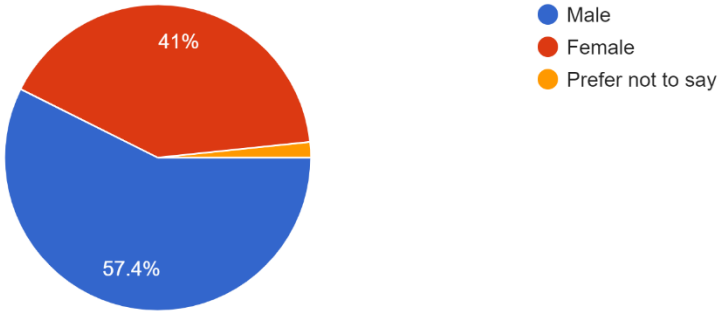
What is your current job position at the brewery where you are employed?

61 responses



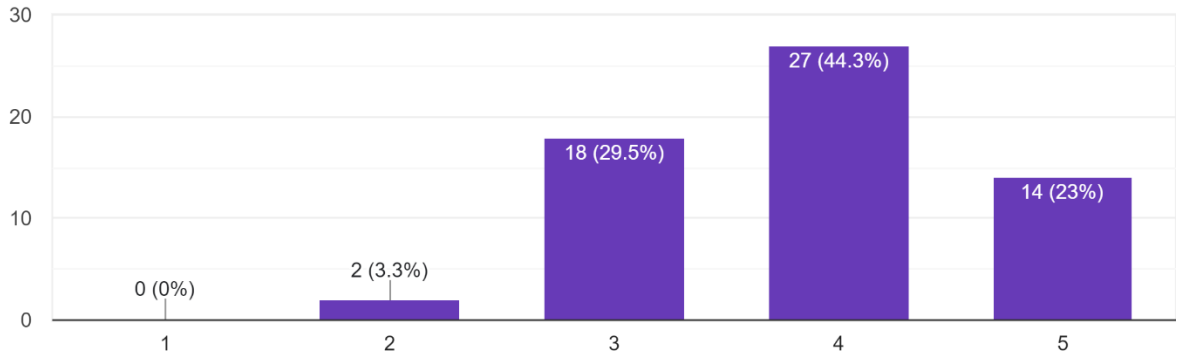
What is your gender identification?

61 responses



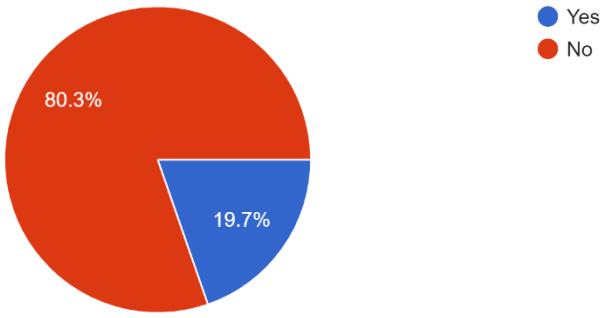
On a scale of 1-5, with 1 being no knowledge and 5 being very knowledgeable, what is your level of knowledge on the concept of using proper body mec...lignment) while engaging in work-related tasks?

61 responses



Have you received an orientation or training from your employer related to proper body mechanics?

61 responses



If you replied yes to the above question and did receive a training or orientation, where did it take place?

11 responses

In the brewery, specifically related to moving full and empty kegs and bags of grain

at the brewery

Annually on the production floor

CBC

fire academy

I was a Fire Fighter for 38 years before this and that were I got training.

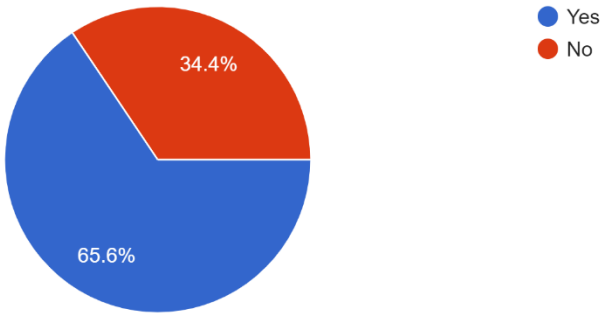
In the brewhouse

at work

At work

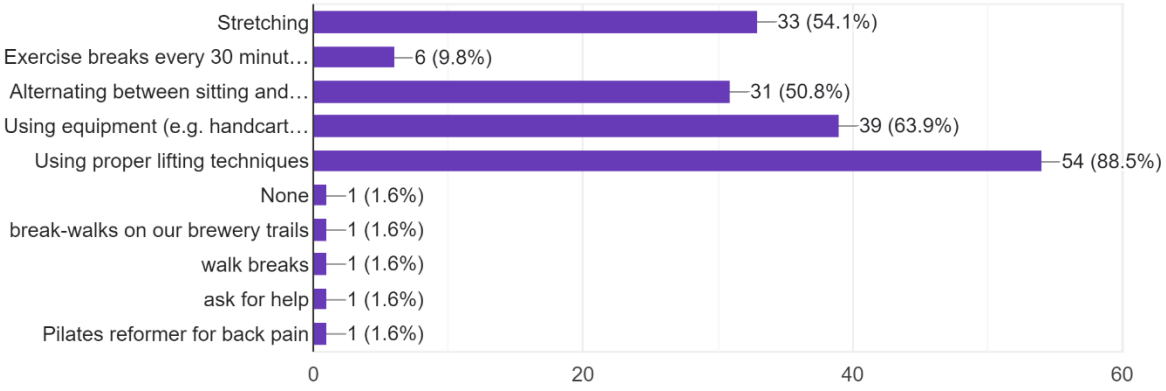
Have you ever had to complete work tasks while injured and/or in pain?

61 responses



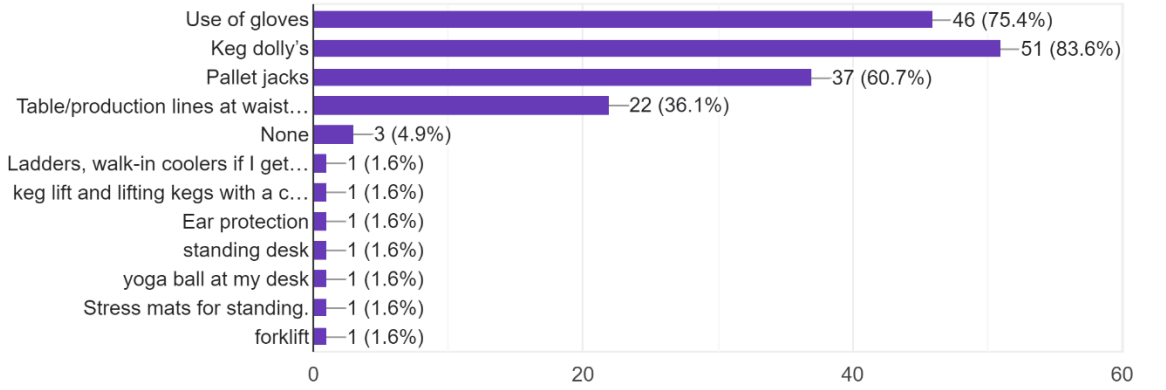
What strategies do you currently use during working hours in order to improve body mechanics?

61 responses



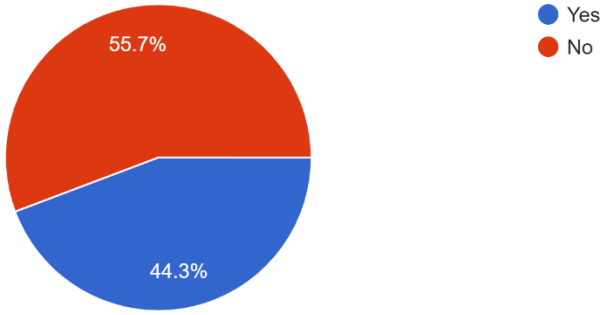
What strategies do you currently use during working hours in order to improve environmental aspects of your job?

61 responses



Do environmental aspects of your job (e.g. placement of glassware, location of grain bags) ever impact work performance and/or cause/increase pain?

61 responses

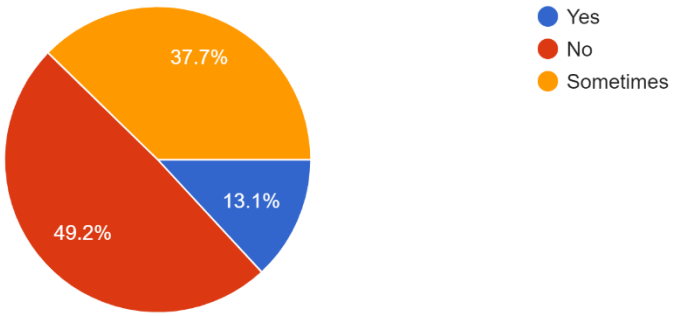


If you replied yes to the above question, which environmental aspects impact work performance and/or increase/cause pain?

28 responses

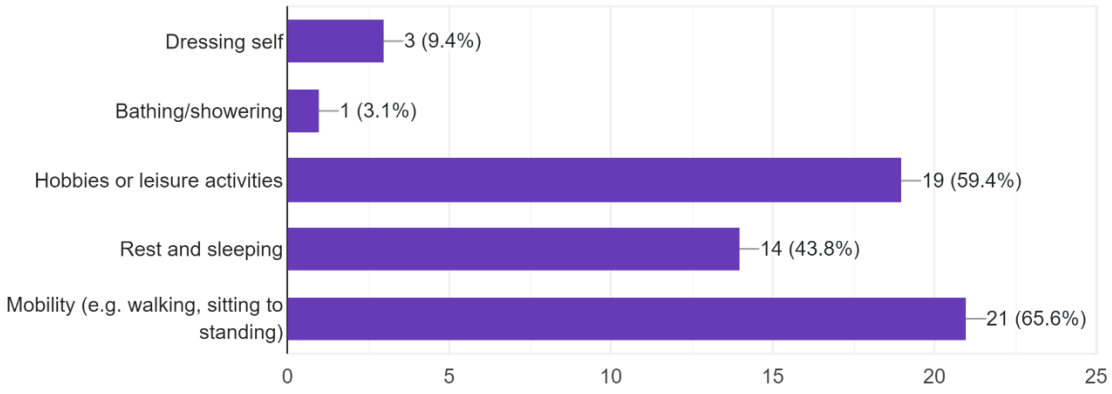
Does work-related pain/injury impact your engagement in activities outside of work?

61 responses



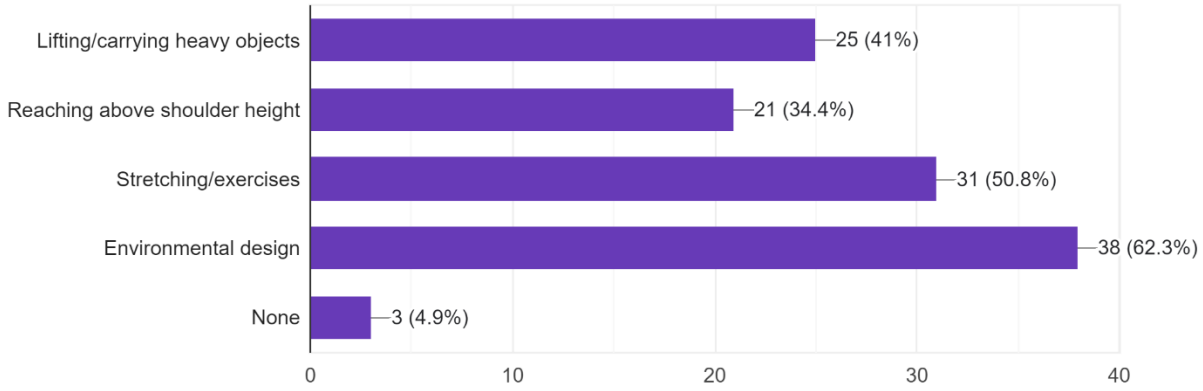
If you replied yes to the previous question, please select all activities that are impacted:

32 responses



Please identify all of the areas in which you feel you need information/strategies related to use of proper body mechanics in your work setting:

61 responses



Please include any additional thoughts/comments here:

10 responses

This is something I've truly never thought about in the work environment. I was taught as a kid to 'lift with your legs' but never thought about how that could affect my work

I think a lot of this is just common sense in this industry..

I'm the owner and do some limited training related to heavy lifting. I'd be interested in more information I can pass on to my employees

asking for and accepting help are crucial

Unstacking kegs for serving and loading kegs for delivery seems like the most dangerous part of the job.

Its a very manual job. Working with body aches is pretty standard...

Many breweries are small businesses that don't have to follow OSHA, they are also all laid out a little differently. A list of "golden rules" that have applicability in different layouts with small underfunded teams would be very helpful, this is definitely an

Appendix G

Pre-Test Survey

Title of Study: Barreling Down on Ergonomics to Increase Occupational Functioning

Primary Investigator/Institution: Dr. Erin Murray, Clara Jayne Davenport, & Makayla Descault/Western New England University

Introduction

We are inviting you to participate in a research study. This study has been approved by the institutional review board (IRB) at Western New England University (WNEU). You were invited by Clara Davenport and Makayla Descault to participate because you work at or own a brewery. This research consent form explains why this research study is being done, what is involved in participating, the possible risks and benefits of participation, and your rights as a participant in this study. This study will take place from April 2024 to July 2024 in partnership with the Department of Occupational Therapy at the College of Pharmacy & Health Sciences at Western New England University. Please read this form carefully and ask any questions that you may have.

Purpose of the Study

The researcher's aim is to examine the effectiveness of ergonomic education to decrease musculoskeletal injuries and symptoms in the brewery industry in order to improve brewers engagement with activities of daily living and instrumental activities of daily living, as well as quality of life . The expected benefit is to create a curated ergonomics program that is virtually accessible and free of charge, to provide further research on the topic for future ergonomic programs, and to bring awareness to the ergonomic concerns in the brewing community. This will add to the limited existing literature about the use of proper ergonomics in the workplace and how it reduces musculoskeletal concerns for improved occupational functioning within the industry.

Description of the Study Procedures

If you are 18 years old or older, currently employed at a brewery as a brewer or pouring and serving beer, and are willing to participate in the study and agree to participate in this study, you will be asked to take part in an online ergonomic training program where you will complete educational modules related to ergonomics, as well as competency checkpoints throughout the module. These modules will provide education on how to use proper body mechanics while engaging in required work-related tasks, as well as environmental adaptations. In addition, you will be educated on preventative interventions to decrease the likelihood of musculoskeletal injury due to repetitive motions and poor ergonomics. You will be asked to complete a pre and post test survey in order to measure the effectiveness of the program. You will be asked to participate in one educational module specific to your position of work (front of house or back of house) that will take up to 60 minutes to complete. You will have access to the module via delivery of email after completing the pre-test survey. The total maximum duration for each participant is 2 hours.

Risks or Discomforts of the Study

There are risks to participating in any research study. It is unlikely that you will be at risk for any physical or psychological harm as a result of your participation in this study. You may find the questions or the interview to cause distress and/or fatigue. You may decline to answer any questions and you may voice concerns to the investigators at any time.

Benefits of Being in the Study

The benefits of participation is to provide further research on the topic for future ergonomic programs and to bring awareness to the ergonomic concerns in the brewing community. The ergonomic modules will benefit brewery employees by providing preventative education to help decrease likelihood of musculoskeletal injuries and pain due to repetitive motions and poor body mechanics, as well as environmental modifications. You will receive no payment for participating in the study.

Costs of Being in the Study

There will be no cost to you for participating in the study.

Confidentiality

Research studies have a risk for some loss of privacy. To help prevent the loss of privacy, your name and place of work will not be recorded on any study documents. We will assign a research identification number to all participants which will be included in all study documentation. All records will be kept strictly confidential. Electronic files will be password-protected and hard copies will be stored in a locked cabinet for six years. Only the study staff will have access to the files. None of the data that we may publish or present in any reports, presentations, or papers will include any information that can identify you as a participant in this study.

The results of this research study may be published in a medical book or journal, or used to teach others. However, your name or other identifiable information, including place of work, will not be used for these purposes without your specific permission. None of the information that we may publish or present in any reports, presentations, or papers will include information that can identify you as a participant in this study

Right to Refuse or Withdraw

The decision to participate in this study is entirely up to you. You have the right to choose not to sign this form. If you decide not to sign this form, you can still participate, however, you will not be included in the study. You can stop being in the study at any time. Tell the research investigator immediately if you are thinking about stopping or decide to stop. Leaving the research study will not affect your medical care or your relationship with Western New England University.

Right to Ask Questions and Report Concerns

You have the right to ask questions about this research study before, during, or after the research. If you have any questions about the study at any time, please contact Clara Jayne Davenport via telephone number (415) 806-4032, Makayla Descault via telephone number (860) 940-4871, or Dr. Erin Murray via email at erin.murray@wne.edu.

If you wish to speak to the Institutional Review Board (IRB), then please contact Dr. Jessica Carlson, Professor of Psychology and Chair of the WNEU IRB, Jessica.outhouse@wne.edu or via telephone at 413-796-2325 or Dr. Minna Levine, College of Pharmacy / Health Sciences, Member of the IRB at minna.levine@wne.edu. This research project has been reviewed and approved by the Western New England University Institutional Review Board.

Statement of Consent

Your signature indicates that you understand this form and you have decided to volunteer for this study. It also indicates you have read and understood the information provided here. You have had a chance to ask any questions you had. You are 18 years old or older, currently employed at a brewery, and are willing to participate in the study.

ELECTRONIC CONSENT: Please select your choice below. You may print a copy of this consent form for your records. Clicking on the "Agree" button indicates that

- You have read the above information
- You voluntarily agree to participate
- You are currently employed at a brewery
- You are 18 years of age or older

(●) Agree
( ) Disagree

Which module are you taking? *

( ) Servers/bartenders
( ) Brewers
(●) Both

Of the following, approximately how many barrels of beer does your brewery produce per year? *

- (●) 0-1500 barrels
- ( ) 1500-5000 barrels
- ( ) 5000-15000 barrels
- ( ) 15000 or more barrels

What is your job position at the brewery you are currently employed at? *

- (●) Back of house (e.g. brewer)
- ( ) Front of house (e.g. bartender or server)
- ( ) Both (e.g. front of house and back of house)
- ( ) Other: _____

Do you currently or have you in the past experienced work-related pain/injury? *

- (●) Yes
- ( ) No

If you replied yes to the previous question, on a scale of 0-10, what is/was your average level of pain throughout your work day?

	0	1	2	3	4	5	6	7	8	9	10	
No pain	○	○	○	●	○	○	○	○	○	○	○	Worst imaginable pain

If you do experience pain, do any of the following activities exacerbate your pain?

- [x] Lifting below the knees
- [ ] Twisting
- [x] Bending
- [x] Prolonged standing
- [ ] Reaching above your shoulders
- [ ] Other: _____

If you do experience pain, where was/is the location of your pain?

- [x] Lower back
- [ ] Shoulders
- [ ] Wrist/hand
- [ ] Other: _____

Has work-related pain or injuries ever impacted your engagement/participation in your work routine? *

- (●) Yes
- ( ) No

If you replied yes to the above question, what activities have been impacted due to work-related pain?

- [x] Lifting 50 lbs. or more
- [x] Lifting below the knees
- [x] Reaching above your shoulders
- [x] Prolonged standing
- [ ] Other: _____

Has your work-related pain or injury ever impacted your engagement in activities outside of work? *

- (•) Yes
- ( ) No

If you replied yes to the above question, what activities have been impacted due to work-related pain?

- [x] Dressing self
- [ ] Bathing/showering
- [x] Hobbies or leisure activities
- [ ] Rest and sleeping
- [x] Mobility (e.g. walking, sitting to standing)
- [ ] Other: _____

Are there any strategies or techniques you have used to decrease your pain during work? *

- (●) Yes
- ( ) No

If you do use strategies to decrease pain, what strategies/techniques have you used?

- [x] Taking standing/walking breaks
- [x] Stretching/exercise
- [x] Use of equipment such as floor mats or adjustable chairs/tables
- [x] Other: taking NSAIDs

If you do use strategies to decrease pain, how often did you engage in those strategies?

- ( ) Every 30 minutes
- (●) Every 60 minutes
- ( ) Only during my lunch break time
- ( ) Other:

On a scale of 1-5, with 1 being no knowledge and 5 being very knowledgeable, what is your level of knowledge on the concept of using correct body mechanics (the way you move to maintain balance, posture, and alignment) while engaging in work-related tasks? *

	1	2	3	4	5	
No knowledge	○	○	○	◉	○	Very knowledgeable

On a scale of 1-5, with 1 being never and 5 being always, how frequently do you consider proper body mechanics when engaging in your everyday job routine? *

	1	2	3	4	5	
Never	○	○	○	◉	○	Always

Appendix H

Post-Test Survey

Responses cannot be edited

Posttest Survey

* Indicates required question

Which module did you take? *

- ○ Server/bartender
- ○ Brewery
- ○ Both

On a scale of 1-5, with 1 being no knowledge and 5 being very knowledgeable, after completing the educational program, what is your level of knowledge on the concept of using correct body mechanics (the way you move to maintain balance, posture, and alignment) while engaging in work-related tasks? *

	1	2	3	4	5	
No knowledge	○	○	○	○	◉	Very knowledgeable

On a scale of 1-5, with 1 being not significant at all and 5 being very significant, how applicable do you feel the information provided in the educational modules relates to your everyday job routine? *

	1	2	3	4	5	
Not significant	○	○	○	○	◉	Very significant

On a scale of 1-5, with 1 being never and 5 being always, how likely do you think you will apply the ergonomic strategies/modifications to your everyday job routine? *

	1	2	3	4	5	
Never	○	○	○	◉	○	Always

After completing the educational program, were there any strategies/techniques and/or ergonomic topics that were new information to you? *

- ◉ Yes
- ○ No

If you replied yes to the above question, what new strategies and/or areas did you learn (select all that apply)?

- ☐ Proper lifting techniques
- ☐ Proper reaching techniques
- ☐ Proper twisting/bending techniques
- ☐ Standing
- ☐ Rest breaks
- ☑ Environmental modifications
- ☑ Other: preventative exercises

Appendix I

Short Proposal Form

Barreling Down on Ergonomics to Increase Occupational Functioning

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A Doctoral Experiential Capstone Project

Presented to the Faculty of Western New England University

In Partial Fulfillment of the Requirements for the

Entry-Level Doctorate

in

Occupational Therapy

---

by

July 2023

Barreling Down on Ergonomics to Increase Occupational Functioning

A Doctoral Experiential Capstone Project Proposal

By

Clara Jayne Davenport, OT/s
July 2023

APPROVED BY:

Erin Murray, OT, OTD-PP, OTR/L
Faculty Mentor

4/12/23
Date

APPROVED BY:

Debra Latour, OT, PP-OTD, M.Ed., OTR
Doctoral Experiential Coordinator

7/12/2023
Date

Western New England University

Occupational Therapy

Doctoral Experiential Capstone Proposal/Plan Short Form Draft

Students Name: Clara Davenport, OT/s

Date of Proposal Submission: June 12, 2023
Faculty Mentor(s): Erin Murray, OT, OTD-PP, OTR/L
Sites: Kismet Brewing Company, Clocktown Brewing Company
Site Mentor(s): Dr. Nicole Lavery, OTD, OTR/L, CKTP, CEAS (To Be Confirmed)

Tentative Title: Barreling Down on Ergonomics to Increase Occupational Functioning

Executive Summary:
The proposed project is to create an ergonomic program for individuals working at breweries in Connecticut and Massachusetts. The purpose of this program is to reduce the risk of musculoskeletal injuries in order to improve the participants' engagement in their preferred occupations and improve productivity.

Introduction/Background:

This project was first proposed to research bartenders and ergonomic concerns in Massachusetts. The topic evolved to focus specifically on breweries due to their growth over the last ten years. In Massachusetts, there were 146 new breweries opened and in Connecticut there were 107 new breweries opened (Brewers Association, n.d.-a; Brewers Association, n.d.-b). As craft breweries became more common in the workforce, there is a risk of more musculoskeletal injuries due to poor ergonomics. It was found by Lavery, et. al. (2022) that brewers who reported work-related injuries were more likely to experience occupational deficits outside of work. Ergonomics of brewers and other individuals working at breweries, such as bartenders, servers, and bottlers, have been evaluated in previous case studies. It was found that consistent ergonomic injuries were related to awkward lifting and posture, reaching, and repetitive movements (Nino, et. al., 2021; Jones, et. al., 2005; Ramsey & Wiegand, 2011).

Ergonomic programs are recommended by the Occupational Safety and Health Administration (OSHA) and the National Institute for Occupational Safety & Health (NIOSH) as a way to reduce the likelihood of musculoskeletal injuries and improve productivity (NIOSH, 2017). Finnie (2019), a physical therapist who now owns and operates a brewery, implemented the recommended style of ergonomic program with his employees. Finnie presented on structuring key aspects of reducing musculoskeletal concerns for brewers. The same recommendations were made in the research by Nino, et. al. (2021). The program for this doctoral capstone will be designed and implemented based on recommendations from the above research and organizations.

Doctoral Experiential Project Overview:

The community experiential of the DEx capstone project involves the implementation of an ergonomics program into breweries located in Massachusetts and Connecticut over a five week period. The researchers aim is to examine the effectiveness of ergonomic education in the brewery industry. The expected benefit is to provide further research on the topic for future ergonomic programs and to bring awareness to the ergonomic concerns in the brewing community. This program will include an ergonomics evaluation for each participant, the implementation of an exercise/stretching program, education on how to use proper

body mechanics while engineering in the required tasks of their job position, and the implementation of an application in which participants will record data such as pain level each day of the five week program. This program will target stretching and strengthening in microbrewery employees to reduce musculoskeletal concerns.

The scholarly component of the proposed DEx capstone project will be to add to the limited existing literature about the use of proper ergonomics in the workplace and how it reduces musculoskeletal concerns for improved occupational functioning within the industry.

The DEx capstone project ideas have been thoroughly discussed and approved by both the faculty and site mentor.

Learning Objectives:

1. The researcher will demonstrate proficiency in delivering health and wellness education regarding lifting kegs and grain bags in the workplace environment with proper body mechanics/posture through a developed ergonomics program to decrease work-related pain and injury incidence.
2. By the end of the ergonomics program, brewery employees' knowledge with use of best practices for proper ergonomics, lifting, bending, and reaching techniques will increase as measured by a pre / post questionnaire.
3. By the end of the ergonomics program, participants pain will decrease with use of best practices for proper ergonomics, lifting, bending, and reaching techniques, as measured by (application name).

Anticipated Needs:

Materials/equipment: REBA, yoga mats, music, theracane, back braces, pens and pencils, paper, color printer, Canva subscription (maybe)
Staffing: brewers will be observed while working so they will be paid for that time, they will not be compensated when using the application if they are not working at the time
Space: breweries provide their space

Preliminary Budget:

Preliminary Budget		
Anticipated Expenditures	**Approximate Cost**	**Potential Funding Source**
Brewers Association Membership	$175.00	TBD
Ergonomics Compliance Training	$36.95	TBD
Brewery safety video courses	$0.00	TBD
Exercise program materials (yoga mats)	$8.99 each	TBD
Theracane	$17.91 each	TBD

Mueller Sports Medicine Adjustable Back Brace	$15.97 each	TBD

Doctoral Experiential Evaluation Plan:

The DEx Capstone project will be evaluated by completion of an evaluation form, determining if the learning objectives were met, and measuring the overall success of the ergonomics program from the pre / post questionnaire and the application where participants will document their level of pain each day of the program. This evaluation will determine if the ergonomics program was successful in increasing participants knowledge in ergonomics such as lifting and bending techniques, as well as if the program was successful in decreasing pain in participants in order to reduce musculoskeletal concerns. The ergonomic program will be continued through the OTD-640 Adult & Aging Practice IV course.

The Social Cognitive Theory (SCT) is a dynamic, ongoing process that explores the reciprocal interactions of people and their environment, and the psychosocial determinants of health behavior. According to this theory, there are three main factors that influence health behavior change: self-efficacy, goals, and outcome expectancies. As individuals adopt new behaviors, this causes changes in both the environment and in the person.
The Social Cognitive Theory (SCT) is known to be particularly useful in rural communities for examining how individuals interact with their surroundings (Latour, 2023). It can be used to understand the influence of social determinants of health and a person's past experiences on behavior change. This theory is the most appropriate for the implementation of an ergonomics based training program in the microbrewery industry. The primary goal of the students' proposed project idea is to improve ergonomics in individuals employed at microbreweries by considering their environment and implementing preventative strategies in order to influence behavior change. The SCT has been used successfully as the underlying theory for behavior change in many areas, one being pain control. Pain is a key aspect of the ergonomics training program. While preventative strategies and education of proper body mechanics is delivered to improve ergonomics, the program also looks to reduce musculoskeletal disorders. When looking at ergonomics and musculoskeletal disorders, pain is the first factor to be considered.

Comments/Additional Information

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Activity/Task	**Outcome**	**Timeline**	**Person(s) Responsible**	**Resources Needed/Comments**
Orient to program site to tour the facility & meet with potential participants	Finalize and secure program sites, educate site owners/managers on program plan and its benefits to their facility, and answer any questions	Summer 2023	Clara, Makayla, site mentor?	- communication between researchers and brewery owners/managers - final program plan
Brewery Safety video courses	Learn about the process of brewing and safety concerns that can arise	Summer 2023	Clara & Makayla	https://www.brewersassociation.org/edu/online-courses/
Ergonomic compliance training	Learn about proper body mechanics, workplace environment set up, and lifting and reaching techniques	Summer 2023	Clara & Makayla	https://www.compliancetrainingonline.com/ergonomics-labor-industry.cfm
Develop an exercise/stretching program that would best benefit workers related to musculoskeletal concerns	Implement the program on site in order to assess and reduce workers pain and risk for musculoskeletal concerns	Summer 2023	Clara & Makayla	https://www.brewersassociation.org/seminars/the-ergonomics-of-brewing-avoiding-injury-and-staying-the-course-in-the-brewery/
Develop a pre / post questionnaire related to employees level of knowledge on ergonomics	Deliver the questionnaire prior and post the implementation of the program in order to measure the success rate of the program related to knowledge of ergonomics	Summer 2023	Clara & Makayla	- understand ergonomics and what is involved - understand ergonomics in the brewing community - identify the knowledge of ergonomics employees in a brewery should know

Appendix J

Needs Assessment One

Ergonomics in Assisted Living Facilities and its Impact on Feeding and Eating for the Geriatric Population: Needs Assessment 1

Problem/ Unmet Need

Dysphagia is a term used to encompass general swallowing concerns and difficulties. As Chilukuri, et. al., (2018) explains, there are two forms of dysphagia: oropharyngeal (OD) and esophageal (ED). OD is diagnosed when there are challenges with the process of swallowing, which can be caused by neurological, musculoskeletal, or anatomical changes. ED occurs after swallowing due to issues within the esophageal anatomical system. Dysphagia is often a secondary symptom of other diagnoses, especially relating to Alzheimer's and other dementia-related diseases, Parkinson's disease, Anterolateral sclerosis (ALS), and cerebrovascular accidents (CVA) (Chilukuri, et. al., 2018). For these diagnoses, dysphagia screenings are typically part of a clinical assessment and sleep-language pathologists (SLP) are an integral part of the interprofessional team (Christmas & Rogus-Pulia, 2019).

The natural aging process can also contribute to the onset of dysphagia. Some areas that can be affected include sarcopenia and changes in sensations (Cichero, 2018; Christmas & Rogus-Pulia, 2019). Additionally, pharmacological drug usage may impact sensation, neuromuscular control, and alertness, which can also impact swallowing (Chilukuri et. al, 2018). In the geriatric population, dysphagia is underdiagnosed and often goes untreated without a diagnosis commonly associated with changes to swallowing (Madhavan, et. al., 2018; Christmas & Rogus-Pulia, 2019).

Target Population

The target population for the needs assessment is the geriatric population, but more specifically, living in assisted living facilities. This program is not focusing on memory care units, which typically house individuals diagnosed with Alzheimer's or dementia-related diseases due to the increased awareness and research around feeding and eating concerns with this population. The geriatric assisted living population was chosen due to the convenience of the population being in one building that also has dining

facilities. Additionally, the geriatric population is typically underserved and underdiagnosed, especially in relation to dysphagia (Madhavan, et. al., 2018; Cichero, 2018).

Literature Review

Pneumonia is a concern for the geriatric population as a whole but Nativ-Zeltzer, et. al. (2022) found that there was an increased likelihood of developing aspiration pneumonia, which is a type of pneumonia caused by food or liquid traveling into the lungs. They found that of the dysphagia patient records they reviewed, 22% developed aspiration pneumonia and half of that population passed due to complications (Navit-Zeltzer, et. al., 2022). Additionally, they found that this population tended to have a lower body mass index (BMI). While this may not directly impact pneumonia, dysphagia may be a cause of lower BMI and can result in other health concerns (Navit-Zeltzer, et. al., 2022).

Ickenstein, et. al. (2010) researched the relationship between pneumonia, quality of life, and neurogenic oropharyngeal dysphagia (NOD) in an in-patient setting. Their research population was individuals diagnosed with strokes. While it may be a different population, dysphagia is a concern for both. One of their objectives was to establish more routine screenings for dysphagia and quality of life for stroke patients in their hospital (Ickenstein, et. al., 2010). They found that pneumonia among their stroke population decreased due to consistent dysphagia screenings. The researchers also found that quality of life scales given at 5 days and then 90 days showed a significant decrease due to swallowing changes (Ickenstein, et. al., 2010). This study shows that early recognition of signs and symptoms of dysphagia, as well as routine screenings, may decrease the likelihood of developing pneumonia.

Almirall, et. al. (2013) researched the OD population and community-acquired pneumonia (CAP). They performed their research using 36 case studies with OD and 72 control case studies (Almirall, et. al., 2013). They found that there was a highly significant correlation between OD and CAP. This is similar to the findings of Navit-Zeltzer, et. al. (2013) who found a correlation between pneumonia and dysphagia, as well as Ickstein, et. al. (2010) who found that an early diagnosis and intervention of dysphagia decreased risk of acquiring pneumonia. Based on these studies, there appears to be a relationship between different types of pneumonia and types of dysphagia. This is significant to the needs assessment because recognition

of signs and symptoms of dysphagia through education could lead to early diagnosis and intervention.

Crary, et., al (2012) researched the impact of strength and exercise-based programs for adults diagnosed with dysphagia. The participants did one hour of dysphagia-related exercise per day for three months. The researchers found that the participants had improved strength when swallowing and three of their tube-fed participants were able to begin oral feeding again (Crary, et. al, 2012). This study was done with adults, not specifically the geriatric population. While the program being created with this needs assessment will not be as intensive as the one by Crary, et. al. (2012), this shows evidence that some forms of dysphagia can be improved with exercise. This could be beneficial for preventative care for the geriatric population since many of them may be diagnosed with sarcopenia and frailty, which could cause decreased ability to swallow due to weakness (Cichero, 2018).

Morris, et. al. (2018) researched the creation of an educational online program in order to better educate care home staff on dysphagia. This was done in order to improve the ability to give residents with dysphagia medications and generally help with eating and feeding concerns. They gathered feedback from 16 staff members over the course of 6 months who found it educational and empowering to have a better understanding of dysphagia and how to care for their residents (Morris, et. al., 2018). While they had a small number of participants and those participants found the online education ‘useful’ and not ‘very useful,’ this is an example of an education-based program designed specifically for staff members of a geriatric facility (Morris, et. al., 2018).

Madhavan, et. al. (2018) conducted research for a pre-clinical dysphagia screening for the geriatric population. They recruited 53 participants over the age of 60. Their screening was found to have a high reliability and internal consistency. They pursued the creation of this screening due to the increased risk of dysphagia and lack of diagnosis for the geriatric population (Madhavan, et. al, 2018). The screening was tailored for community-dwelling elderly adults and is meant to screen for risk factors and improve outcomes and quality of life with early interventions (Madhavan, et. al., 2018). This study shows that there is an acknowledgment of a gap in care for this population. Additionally, more geriatric individuals may benefit from preventative measures, early interventions, and educated staff.

Dysphagia and cultural humility are also important considerations when looking into the topic of feeding and eating. Riquelme (2004) discussed the issue and how it decreases the quality of care for patients diagnosed with dysphagia. For example, Colin (n.d.) explained how Haitian communities may believe that certain foods will make you sick and refuse to eat in a hospital. This could be problematic when administering a barium swallow evaluation. Similarly, in assisted living facilities, culture and eating need to be considered in order to give optimal education to staff.

Resource

The Western New England Occupational Therapy Doctorate program has community ties to assisted living facilities, such as Heritage Woods in Agawam, MA. The College of Pharmacy and Health Services also has connections to more assisted living facilities as the pharmacy students have created wellness services and other community-oriented events at facilities around Springfield, MA. The pharmacy students are also interested in collaborating with the occupational therapy students at the assisted living facilities, which will help build rapport. All these facilities provide dining services and have staff to assist the residents. Based on this researcher's experience at several of these facilities, they typically have rooms where educational programs could be provided. Additionally, residents generally remain on-site throughout the day and enjoy gathering for activities provided by the facilities.

Barriers

Stakeholders at the assisted living facilities could be barriers to the development of a program. They may not see the need for the program and would have to pay staff to attend. They may be more open to only having the residents attend a program instead. If only residents attended the program, that could cause a barrier in results due to cognitive decline in the geriatric population and lack of support in continuing an exercise program from the staff. Another barrier may be the high turnover rate for staff in assisted living facilities. This would cause the program to be less effective long term or need to be repeated more often, which may not be possible due to resources. Another barrier is the need for a licensed SLP to assist in the program development. A certified feeding or eating specialist may also assist, however they are typically trained in pediatrics. An SLP who is interested in geriatric care and willing to dedicate time

and energy to help with the program may be difficult to find in the Springfield area.

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Appendix K

Needs Assessment Two

Ergonomics in Assisted Living Facilities and its Impact on Feeding and Eating for the Geriatric Population: Needs Assessment 2

Objectives

This needs assessment aims to evaluate the knowledge and understanding assisted living facility employees to have of swallowing concerns with the geriatric population. The assessment will be conducted through interviews with assisted living facility staff members and surveys with geriatric healthcare providers. The interviews will be used as a way of gauging the knowledge of assisted living staff and also determining any potential gaps in the care they see in the community. The surveys will be used as a convenient way of gathering information from a variety of geriatric providers, since this group of individuals may be too busy for an interview or focus group. The surveys will be used to gather data regarding what providers see as gaps in care from a clinical perspective and gather more information about how often they see dysphagia diagnoses and referrals for evaluation. This information will be used to develop an educational program for assisted living employees and residents. The program will educate them on optimal ergonomics for feeding and eating positioning and strengthening exercises.

Objectives:

1) Researcher will interview at least three assisted living staff members within two weeks to understand the knowledge level of staff regarding eating and feeding concerns and any additional information that may be gathered regarding the topic.
2) Researcher will receive completed surveys from at least ten healthcare providers within two weeks to gain a better understanding of clinical concerns and healthcare providers' opinions on dysphagia and eating and feeding concerns for geriatric patients.
3) Researcher will use this information to create an educational program for assisted living staff and residents on the impact of ergonomics and strengthening exercises for feeding and eating within 14 weeks.

Data Collection Methods

Data collection will occur through interviews with assisted living staff and surveys with healthcare providers. The interviews will be conducted using the interview template previously created. The staff interviewed will be an eclectic group who have direct interactions with residents and at least one staff member who works directly with food services at the assisted living facility. Questions will be centered around the feeding and eating habits of residents, as well as how the facilities are currently structured regarding dining facilities. Additionally, it would be beneficial to interview at least three members of the assisted living facility to understand the perspective of the population being affected. These interviews would be shorter in length and specifically include residents with no to mild cognitive impairment who are showing or expressing some concerns with eating and feeding.

The surveys will be used to gather information from healthcare providers working in a clinical setting with the geriatric population. Surveys will provide the researcher with knowledge of interprofessional perspectives on feeding and eating concerns. They will also help guide the topics that the educational program focuses on and support or add to the interviews with assisted living staff and residents. The surveys are an important aspect of the needs assessment because the formal diagnosis of dysphagia is a medical condition that must be diagnosed typically with assistance from a sleep-language pathologist. This means that the clinical perspective of feeding and eating concerns is crucial because residents could have dysphagia but be undiagnosed which is likely to be a concern throughout the doctoral experiential.

Advantages and Disadvantages

The advantages of doing an interview include gaining knowledge from the population and caregivers of the population. Their experience will allow for greater insight into the topic and help guide the direction of focus for the educational program being created. Another advantage of performing interviews is that they can be completed in person, over the phone, or virtually as needed for the individual. The disadvantages are that there are a limited number of individuals that can be interviewed due to time constraints. Additionally, the location and community will greatly influence the demographics

of the population, which means that the needs may not apply to a different community. Due to the researcher's language limitations, interviews can only be conducted in English, which also limits the population being included in the interviews. Interviews will be using qualitative thematical data analysis to interpret the results, which is an advantage due to the quality of analysis but a disadvantage due to the time needed (Warren, 2020).

The advantages of doing a survey are that it can be created and sent en masse via email. This will allow for a larger pool of clinical providers who can take the survey. Surveys can also be formatted using a Likert scale, which will make it easier to analyze, especially if using a system like Google Forms which will format data, using statistical analysis, automatically. The disadvantages of a survey are that there is no reliability regarding the environment of the individual taking it. There is also no guarantee that the individual taking the survey is the provider to whom it was sent. Surveys sent to healthcare providers will likely need to be approved by a manager or other stakeholder, which is time-consuming and requires contacting multiple organizations. Similar to the interviews, the surveys will have write-in options and those will require a qualitative thematic data analysis (Warren, 2020). This will also be time-consuming but result in strong qualitative data to support the educational program.

SWOT Analysis

STRENGTHS	WEAKNESSES
• Free program for assisted living facilities • Evidence-based research supports the need for early intervention and prevention of eating and feeding concerns (Christmas & Rogus-Pulia, 2019) • Opportunity for interprofessional cooperation	• No funding • No programs exist to model the current program on • Residents of assisted living facilities may not be cognitively able to follow the strengthening regime after the program without extra supports • Currently no ability to hold programs in multiple languages or provide translators

	• Need supervision/support from a speech-language pathologist • Need approval and interest from assisted living facility staff and stakeholders • Most research focuses on diagnosed dysphagia population
OPPORTUNITIES	**THREATS**
• Potential to decrease rates of aspirating pneumonia (Nativ-Zeltzer, et. al., 2022) • Educate residents and staff on the importance of ergonomics • Decrease sarcopenia of the throat and mouth (Shiozu, et. al., 2015) • Increase the likelihood of dysphagia being diagnosed and recognized and therefore increase early interventions • Improve the quality of life for individuals at risk of eating and feeding concerns (Chen, et. al., 2009)	• The program relies on volunteering from a speech-language pathologist • High turnover rates from assisted living staff may cause the education of staff to have a low long-term impact on residents (AHCA/NCAL, 2021) • Program may not be sustainable long term

Conclusions

Feeding and eating is an occupation that is intrinsically linked to all cultures and groups of people. As Christmas and Rogus-Pulia (2019) noted in their research, dysphagia is underdiagnosed in the geriatric population. However, pneumonia is a major concern to all of the geriatric population and according to Nativ-Zeltzer, et. al., there is a connection between increased likelihood of death due to pneumonia with a diagnosis of dysphagia (Navit-Zeltzer, et. al., 2022). Even individuals without a diagnosis of dysphagia can be impacted by concerns of aspirating pneumonia, especially due to poor ergonomics in the dining hall and personal room environments. Sarcopenia can also be a factor for eating and feeding concerns with the

geriatric population (Shiozu, et. al., 2015). Ergonomics and sarcopenia can be improved through education, exercises, and environmental modifications which can increase access to preventative care and early intervention**.** Additionally, education opportunities for assisted living staff will increase the likelihood that signs of dysphagia will be recognized earlier.

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Appendix L

Needs Assessment Revised

The Efficacy of Ergonomic Intervention on Individuals Employed at Micro-Breweries To Prevent Musculoskeletal Disorders

Problem/ Unmet Need

Individuals working in the food service industry are typically expected to work long hours and stay on their feet for extended periods of time. One of the most common challenges to healthy ergonomics in the industry are repetitive motions; lifting heavy or awkward objects and standing in awkward postures caused by leaning, reaching, or bending. Workers in this industry are prone to musculoskeletal disorders, making ergonomics the top reason for injury claims.

Current literature indicates there is insufficient evidence to support the efficacy of preventative strategies to reduce work-related injuries among individuals in the brewery industry. One of the reasons why small companies do not consider ergonomic evaluations as a way to improve processes and increase productivity is the lack of ergonomic knowledge and successful examples of benefits obtained by the application of ergonomic principles (Nino et al., 2021).

The researcher's aim is to examine the effectiveness of ergonomic education to decrease musculoskeletal injuries and symptoms in the brewery industry in order to improve brewers engagement with ADLs and IADLs, as well as quality of life.

Target Population

According to the Brewers Association, 9,247 breweries were operating in the United States in 2021 (Brewers Association, n.d.). In 2020, Dunham & Associates performed a biennial economic impact study of the brewery industry in America on behalf of The Beer Institute and the National Beer Wholesaler’s Association. They reported that there were over two million jobs created by the brewing industry and 883,000

of those jobs were from retail based (John Dunham & Associates, 2021). There is no current research specifying staff who only serve beer at breweries, however, according to the U.S. Bureau of Labor Statistics, as of 2023 there were an estimated 711,140 bartenders employed in the United States. The population will be recruited via email among all states so long as they are currently employed at a brewery as a brewer or pouring and serving beer.

Literature Review

Jones et. al. (2005) performed a case study on a pub in British Columbia, Canada. This study was meant to observe and analyze the ergonomic strain of the bartenders, cooks, and waitresses in order to determine the most likely areas of work-based injury. After this analysis, they implemented educational and environmental interventions to reduce likelihood of ergonomic based injuries for the staff. A task analysis of typical activities for each group was performed and it was found that the lumbosacral region was at high risk from tasks involving lifting and high reaching. Suggestions were made to modify each task based on the environment of the pub in order to reduce future musculoskeletal injury.

Lavery et. al. (2022) sought to determine the most common injuries that brewers in America experience at their workplace and how it impacts their daily lives. They used a survey to gather data and received 191 responses from around the United States. Based on the results of the survey, the authors found that common injuries included musculoskeletal injuries, which is consistent with other studies on the food service industry (Jones, et. al., 2005). Brewers also reported that the injuries they received at work negatively impacted their occupational activities outside of work. The authors found that there was a statistically significant correlation between these two concerns. This study reflects the need for ergonomic and safety interventions to be implemented in industrial brewing spaces around the United States in order to reduce musculoskeletal injuries and their impact on the staff's activities of daily living outside of work.

Nino et. al. (2021) evaluated the production process of an artisan brewery in Valdivia, Chile in order to identify opportunities for improvement based on ergonomic principles. The critical areas identified from

an ergonomics point-of-view that exposed workers to high physical risk factors included manual handling, awkward postures, and repetitive movements. Workers were required to lift, carry, and stack malt bags and beer kegs, manipulating each load from the ground level 28 times a day. These tasks forced workers to engage in repetitive movements and awkward postures due to consistently reaching and bending. The authors recommended the use of mechanical aids such as load-lifting equipment in order to prevent the appearance of occupational diseases related to musculoskeletal disorders.

Filiaggi & Courtney (2003) reviewed the occupational hazards of the food and eating industry due to the high incidence of non-fatal injuries. They found that the majority of injuries were tears, strains, and sprains. Overexertion and falls were two of the most common causes of these injuries, as well as being hit by an object (Filiaggi & Courtney, 2003). The authors made recommendations in order to reduce the incidence of injury in the food and eating sector. This included buy-in from management and staff, which is necessary to maintain safety protocol and reinforce it in the daily workplace. They also recommended safety modeling and training that is integrated into the work environment instead of being part of an outside training module. Lastly, they recommended holding the employees accountable for their own safety by integrating it into performance reviews.

Resource Availability

Resources include access to the state guilds for breweries in the United States, including the email of their representatives and list of each brewery in the guild.

Barriers

According to the Bureau of Labor Statistics, there was a 130.7% turnover rate for employees in the restaurant/food service industry in 2020 (Carouthers, 2021). This may negatively impact the gathering of information if there is a lack of consistency in participants, especially considering a virtual educational program. Delivering an online program, carryover of ergonomic practices into the breweries may be inconsistent and difficult to monitor. Additionally, there may be difficulty maintaining the ergonomic

practices being taught due to the preconceived structure of breweries. Many breweries are constructed based on aesthetics instead of worker safety consideration. This could cause challenges when trying to change their view on work culture or make suggestions to change the work setting and reduce their commitment to following correct ergonomic procedures. Many ergonomic devices are expensive, such as high quality seats, and breweries do not have a lot of financial overhead. Industrial brewing equipment is often built into the facility and cannot be moved, which may make it difficult to alter the environment in order to improve ergonomics. The spaces may not be large enough for additional modifications as well.

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Appendix M

Literature Review

Ergonomics & importance/impact on productivity

For employers, ergonomics is an important consideration when designing the workplace environment for employees. Oguns (2023) found that there was correlation between improved productivity and ergonomics, as well as an improvement in mental health for employees working desk jobs and with repetitive upper body movements. The seminal article by Resnick & Zanotti (1997) found that employees benefited from ergonomic improvements in their work environment through modifications of workstations which in turn improved productivity. Deouskar (2017) also determined that ergonomics played a significant role in the workplace for employees and influenced physical and mental wellbeing. It was also determined by Cinkay (2023) that implementation of long term ergonomic orientations and interventions decreased workers compensation claims in a hospital setting.

Breweries & ergonomics

In 2011, Ramsey et. al. published an evaluation report of a brewery in Colorado on behalf of NIOSH due to concerns of poor ergonomics and MSDs with their canning employees. The researchers recommended environmental adaptations, workstation adjustments, and ergonomic education for managers and employees. They also found that employees did not feel the brewery provided sufficient ergonomic training nor did employees take active steps to engage in training activities resulting in decreased levels of participants for safety training.

Nino, et. al. (2021) performed a task analysis and used the Manual Handling Assessment Charts (MAC) tool in order to modify the environment of the two manual tasks determined to be the most detrimental for a small-scale brewery in Chile. They found that environmental adaptations and body mechanics training decreased the MAC scoring which showed the effectiveness of ergonomic intervention to decrease excessive exertion on the body due to lifting and repetitive movements. Brents, et. al. (2021) and Ji, et. al. (2023) determined that repetitive keg lifting caused overexertion and increased likelihood of MSDs

Ogundiran, et. al. (2020) performed a study to determine if there was an increase of MSDs for brewery employees who worked at breweries for extended periods of time in Southwest Nigeria. The authors found that brewery employees did report high MSDs over time, especially with injuries to the lower back. In 2022, Lavery et. al. found that brewery employees reported being more prone to workplace injuries related to repetitive motions, twisting, and bending. The authors found a significant correlation between work-place MSDs and decreased ability to engage in daily occupations outside of work. Mgbemena (2022) focused on environmental adaptations and furniture adjustments for brewers in Nigeria and found that brewery employees reported improved ergonomics when spaces were modified to decrease strain on the body due to unconventional workplace environments.

Bartenders & ergonomics

Currently there is limited recent research on the impact of ergonomics on bartenders. In 2005, Jones, et. al. performed a case study at a pub in British Columbia to determine ergonomic factors increasing the risk of MSDs. The authors found that modifications of tasks for the bartenders was effective for reducing strain on the upper body. Filiaggi & Courtney (2003) concluded that restaurant workers overall were susceptible to ergonomic-based hazards from the profession. Similar to Jones, et. al., Filiaggi & Courtney found that overexertion and repetitive movements were two factors that increased likelihood of MSDs for employees. One common job for bartenders at breweries is working a cash register or other payment device. While no studies have been completed with bartenders, Algarni, et. al. (2020) found that supermarket cashiers had an increased likelihood of lower back and neck MSDs. This role contains similar job roles as a bartender, however a cashier would likely be handling the register at an increased volume compared to a bartender.

Ergonomic programs & education

MSDs are an increasing health problem in the workplace due to a lack of awareness and knowledge of ergonomic practices. Attia, et. al. (2023) performed a study to identify the level of ergonomic awareness and work-related musculoskeletal disorders among staff nurses in Oman and found a significant correlation between ergonomic awareness and their working ability concluding that there is a need for ergonomic awareness in the workplace for a sustainable and safe working environment. Similarly, Oladeinde, et. al.

(2015) carried out a study to examine the level of awareness and knowledge of ergonomics among medical laboratory scientists and also found that the application of ergonomics in the work environment was poor and there was a need for daily ergonomic education.

Research supports how ergonomic education can help in reducing the risk for MSDs and encouraging use of proper body mechanics in the workplace. In America, organizations such as the Occupational Safety and Health Administration (OSHA) and the National Institute of Occupational Safety and Health (NIOSH) investigate workplace environments and set the standards for safety and health, including ergonomics in a variety of workplaces. Both organizations have found that ergonomic training and education improve productivity and decrease likelihood of MSDs developing. In 2020, Abdollahi, et. al. performed a study to examine the effectiveness of an ergonomic educational program among nursing staff who work in the operating room. The authors found that those who participated in ergonomic education including knowledge on prevalence of MSDs and methods in preventing them, there was a significant decrease in the risk of MSDs after completion of the educational program. This data determined that ergonomic education including on-site job training should be incorporated into work environments in order to reduce workplace injuries, as well as frequent call outs. Wurzelbacher, et. al. (2020) performed a study to determine the effectiveness of ergonomic interventions among material handling operators. These interventions included implementation of strategies that encourage use of proper body mechanics such as equipment like lift tables and anti-fatigue mats. Participants reported a significant decrease in upper extremity pain frequency and severity after participating in the ergonomic intervention routinely. Anti-fatigue mats were specifically associated with decreased frequency of low back pain.

While engaging in poor ergonomics can negatively impact your work performance, it can also have an influence on the engagement in occupations in your daily life. Sohrabi & Babamiri (2022) conducted a study to evaluate the effectiveness of an ergonomics training intervention on MSDs, quality of work-life, and occupational psychosocial stresses among office workers.

Zerguine, et. al. conducted a systematic review in order to identify the outcomes of online office ergonomics training. The authors found that most of the trainings focused on ergonomic elements including posture,

musculoskeletal health, and knowledge. They determined that a more instructional approach involving learning activities and instructions will help to increase efficiency and learning outcomes.

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Appendix N

Systemic Review

Systemic Review of Ergonomic Programs and Back Pain for Employees

In Partial Fulfillment of the Requirements for the

Entry-Level Doctorate

In

Occupational Therapy

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By

Clara Davenport, OT/s

July 2024

Introduction

Ergonomics play a role in the workspace and poor ergonomics can negatively impact physical and mental wellbeing. Back pain is a common musculoskeletal disorder (MSD) reported by employees. Organizations, such as the Occupational Safety and Health Association (OSHA), have created online and in person ergonomic courses in order to decrease likelihood of injury or development of an MSD. Ergonomic programs have the potential to be a low-cost intervention to decrease pain and improve productivity and wellness of employees. The research question posed for this review is to determine if there is a correlation between poor ergonomics and neuromusculoskeletal pain and injuries, specifically spinal, in order to further knowledge and gain proficiency on the impact of ergonomics on musculoskeletal spinal function.

Methods

Pubmed and the Western New England University D'Amore library was chosen as the primary search engine due to researcher access through their learning institution. Key terms for the search included ergonomics, spine, program, and back. Research included were published between 2004-2024.

Inclusion criteria included clinical trails, randomized control trials, studies focused on ergonomic programs and the impact on the spine/back, population over 18 years old, population focused on employees in a workplace, inclusive of all genders

Exclusion criteria included systematic reviews, systematic analyses, meta-analyses, not studies focused on ergonomic programs and the impact on the spine/back, population under 18 years old, population not focused on employees in a workplace, exclusive of all genders.

Results

A total of 1,451 participants were included in the systematic review from six studies focused on the effectiveness of ergonomic programs that targeted back pain. Five studies reviewed utilized randomized control as their study method and Kim, et. al. utilized a case study with experimental and control group. Out of the 6 studies, two focused on nursing assistants, one on office workers, one on automobile employees, one on firefighters, and one on nurses.

Two programs were focused on using exercise programs as a method of improving ergonomics and decreasing lower back pain. Rasmussen et. al. (2016) and Moreira et. al. (2021) both recruited nursing assistants and participants completed a 12 week exercise program. Moreira et. al. (2021) found that the 12 week program did decrease low back pain. Similarly, Jaromi et. al. (2012) found that a 6 week program focusing on nurses decreased back pain. The researchers evaluated the participants after 6 and 12 months and found that the intervention group had consistently decreased back pain compared to the control. Rasmussen et. al. (2016) found that exercise programs specifically improved ergonomics of lifting and decreased fear avoidance but it did not decrease muscle exertion or work ability.

Aghilinejad, et. al. (2014), Kim, et. al. (2004), and Jaromi, et. al. (2012) used "back school" workshops with a combination of education and exercise to decrease back pain. Jaromi, et. al. (2004) followed up with staff over 6 and 12 months while Kim, et. al. completed a review session every 6 months for two years. All three studies found that back pain reports from employees decreased compared to their peers and Kim, et. al. determined that time off related to back pain also decreased for the experimental group.

Del Pozo-Cruz, et. al. (2012) utilized an online web program that was accessed by the experimental group of office workers for five minutes per day for nine months. This was the only study which utilized online methods to deliver an ergonomic program. The researchers did find that individuals who participated in the online program reported decreased back pain compared to the control group.

Discussion

The six studies assessed all concluded that ergonomics programs were an effective and potentially low cost method of decreasing back pain for employees. Notably, Kim. et. al. (2004) found that call outs from work decreased which displays the benefit ergonomic programs can have for both the employer and employees. In contrast, Rasmussen, et. al. (2016) did not find that ergonomic programs decreased call outs from work for nursing assistants. This could be due to different cultures or expectations of societal or working environments.

Majory of the programs were completed in person, however, Del Pozo-Cruz, et. al. (2012) did use an online program and found it to be effective. In person ergonomic programs have the benefit of instructors

being able to correct issues and answer questions, as well as a sense of interpersonal connection and comradery. In contrast, online programs can be beneficial for unconventional schedules and may be more cost effective.

Review and follow-up of the skills learned in the ergonomic programs was also an effective method of decreasing back pain and measuring progress (Kim, et. al., 2004; Jaromi, et. al., 2012). The other studies reviewed found improvements initially but there was no long term data to determine if reviews are needed long-term to maintain good ergonomics and decrease lower back pain.

Aghilinejad, et. al. (2014) compared three groups between pamphlets, lectures, and workshops. The workshops were found to be the most effective at reducing pain for automobile workers. While Del Pozo-Cruz, et. al. (2012) research did find online programs to be effective, more research should be done to compare the effectiveness of in-person versus online ergonomic programs. If back pain significantly decreases for employees, employers may consider this when determining the types of programs based on productivity at work and quality of life.

Strengths

The research studies have similar findings spanning over a 20 years a variety of professions. The research of ergonomics is well founded and available online for individuals interested in the topic. Additionally, ergonomic programs can be a low-cost preventative tool for employers to improve productivity in their workspace.

Limitations

The focus of the six studies was primarily on preventative strategies and exercises for employees. Enviromental modifications and adaptations are also considered a part of ergonomic intervention.

The review was conducted by a single individual rather then a team. Additionally, the review was completed over a three week period rather then six month due to time constraints of the doctoral program the research attends.

Conclusion

Ergonomic programs are an effective and low-cost solution to decrease back pain and possibly improve productivity for employees. More research should be conducted on the cost-benefit analysis of productivity and the benefits of in-person versus online programs. Reviews and follow-ups should be included in future long-term studies to determine if they improve ergonomics moreso then a single workshop.

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Appendix N

Program Strategic Plan Form

PROGRAM STRATEGIC PLAN

(Program Title): *Barreling Down on Ergonomics to Increase Occupational Functioning*

(Student Name): *Makayla Descault, OT/s* *Clara Davenport, OT/s*

(Organization): *Western New England University* Years: 1

Analysis of program evaluation, internal and external environments:

	Program Evaluation Results	**Internal Institutional Environment**	**External Environment**
Strengths	The brewing industry is a busy working environment with non-traditional work schedules, making it difficult for employers/employees to have enough time in their day for additional commitments. Our educational program can be open and closed at any time without losing their spot in the program and be completed at participants' own pace. The program can be completed in groups as long as the pre/post tests are completed separately. Additionally, after the conclusion of the research project, the pre/posttests will no longer be part of the modules. The program can be easily accessed via phone, tablet, or computer as well.	Ergonomic educational programs have been shown to reduce work-related pain/injury, as well as musculoskeletal disorders (MSDs) through improved body mechanics and environmental adaptations, leading to improved productivity and efficiency, as well as improved engagement in occupations and activities of daily living (ADLs) for employees outside the work environment.	Due to the program being completed online and can be sent via a link, it allowed recruitment to increase from local breweries to breweries from all 50 states via email.
Weaknesses	The site used to create the ergonomic module requires participants to download an app and create an account in order to	Microbreweries sometimes only have 1 or 2 owners/workers decreasing our opportunity to reach a larger population size	There is less control/ability to track progress and encourage employees to take the program unless it is mandated by an employer. Based on

	complete the program if accessing from a mobile device. The program can take up to 30 minutes to complete and would take up to an hour if completing both programs for bartenders and brewers. Using an online platform can make it challenging to recruit individuals and does not allow for the same type of interpersonal connections to form		conversations with brewery employees, it seems that individuals who are incentivized to take the programs independently have a higher likelihood of already being knowledgeable in the topic of ergonomics or have real life experience with MSDs. Targeting individuals who may not have been exposed to the topic of ergonomics is challenging remotely due to the decreased likelihood of them opening and reading an email on a topic that may not be as engaging to them.
Opportunities	Due to the flexible and online nature of the programs, there is high potential to connect with brewing organizations, such as the Brewers Association, with state brewing guilds, or with continuing education companies to host the programs and continue promoting them post-doctoral capstone completion.	Due to our site mentor being an occupational therapist, as well as a brewery owner, we are able to gather additional resources to connect with these organizations.	Access to these organizations allows for the programs to reach breweries from all around the world; most breweries do not provide ergonomic training making our program something "new". Additionally, smaller breweries tend to have slim margins and cannot afford regular paid training, as well as being more likely to be housed in an unconventional space which provides more challenges with ergonomic design so the programs would be particularly useful. There are some resources available to brewers, but none were uncovered for bartenders during the process of researching ergonomics. Many brewers perform both roles and bartending is a crucial step to creating a customer base for breweries with taprooms or

			brewpubs. Due to this, there is a market and high need for programs that target this population.
Threats	Participants may not have access to the internet or a device that allows them to download the app to complete the program. Additionally, participants may not know how to navigate the application or may not be able to complete it within work hours, which may decrease their willingness to take the program unpaid.	The current hosting site is free but due to that does have errors and may not be as user friendly due to those issues, as well as having no customer support available without a paid service.	Some breweries offer training currently and some employees have received training from other jobs, most notably from previous careers as firefighters. Without someone from the brewery (most likely an owner or manager) using the programs as a resource and implementing a culture of wellness with the recommended changes, the program may not be as effective or become established as a form of training and education. Established breweries may not be able to commit to environmental adaptations due to budgets or aesthetic design that appeals to their customer base.

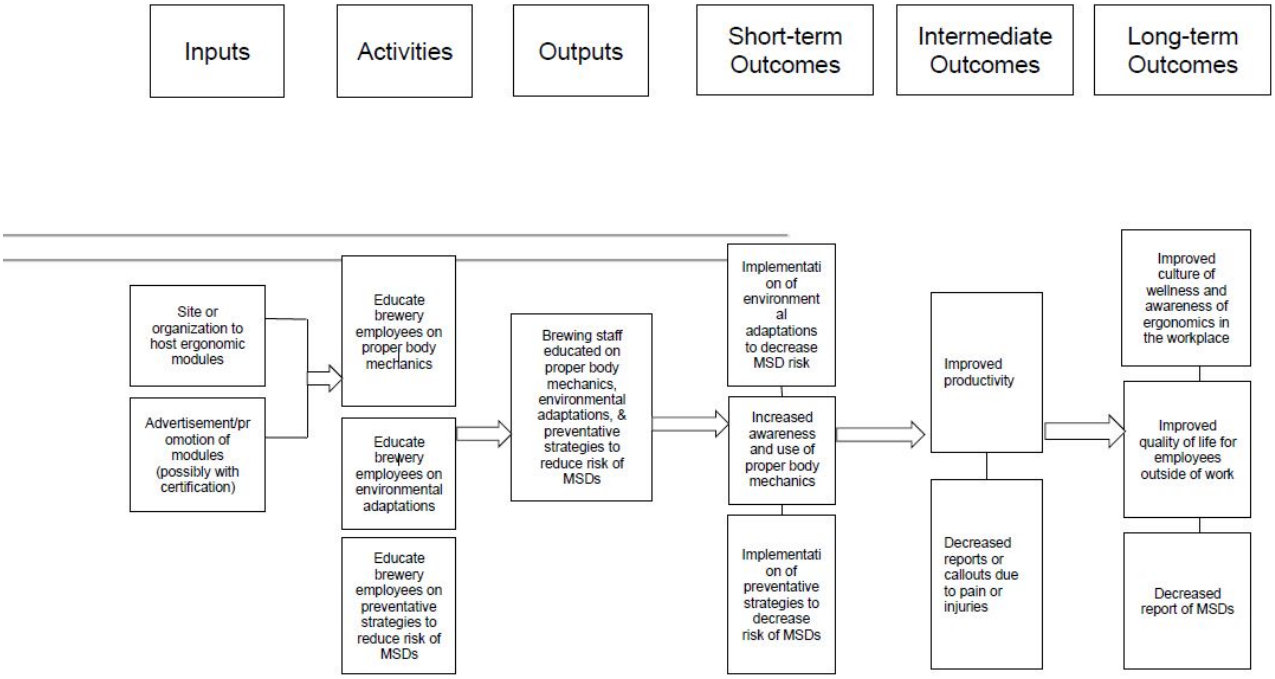
Long-Term Program Goal	**Action Steps**	**Person(s) Responsible**	**Due Date for Action**	**Results / Update**
An organization related to brewing or ergonomics will host the ergonomic programs online in order to	The Brewers Association (BA) safety committee will review the design and elements of the ergonomic program *(preferred organization) and share the course among other brewers	Dr. Nicole Lavery, Safety Committee members	TBD (possibly 7/17/24)	Ongoing

educate the brewing population on ergonomics.	Reach out to the Applied Ergonomics Society to investigate collaboration	Makayla Descault & Clara Davenport	TBD (based on BA safety committee decision)	Ongoing
	Delivering a presentation to the Craft Brewers Conference to share the ergonomic program among brewers and continuation of the course in additional breweries	Makayla Descault & Clara Davenport	April 28-May 1, 2025	Ongoing

Long-Term Program Goal	Action Steps	Person(s) Responsible	Due Date for Action	Results / Update
The program topic of ergonomics within the brewing industry will continue to be researched and expanded upon by future OT students in order to ensure sustainment of ergonomic strategies within the brewing industry.	Maintain a relationship with Gannon University OT department	Brewery owners, Gannon University OT department	Ongoing	Ongoing
	Future Gannon University OT students will review the foundation and elements of the ergonomic program including program design and resources/tools	Gannon University OT students	Ongoing	Ongoing
	Future Gannon University OT students will expand on the ergonomic program in the breweries to ensure sustainment of ergonomic strategies	Gannon University OT students	Ongoing	Ongoing

Site Mentor Signature: Nicole Lowery **Date:** 6/21/24 **Student Signature:** **Date: 6/19/2024**

Logic Model for Ergonomic Brewery Education Sustainability



Appendix O

Health and Wellness Behavior Change Theory Position Paper

The Efficacy of Ergonomic Intervention on Individuals Employed at Micro-Breweries to Prevent Musculoskeletal Disorders

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Health and Wellness Behavior Change Theory Position Paper

OTD 642

Makayla Descault, OT/s and Clara Davenport, OT/s

Spring 2023

Change According to Theory

Health promotion is defined as the process of enabling people to increase control over their health and its determinants, and thereby improve their health (Latour, 2023). Researchers and practitioners use theory to provide tools to design and evaluate programs in order to reach the goals and improve health outcomes.

The Social Cognitive Theory (SCT) is a dynamic, ongoing process that explores the reciprocal interactions of people and their environment, and the psychosocial determinants of health behavior. According to this theory, there are three main factors that influence health behavior change: self-efficacy, goals, and outcome expectancies. As individuals adopt new behaviors, this causes changes in both the environment and in the person.

The Social Cognitive Theory (SCT) is known to be particularly useful in rural communities for examining how individuals interact with their surroundings. It can be used to understand the influence of social determinants of health and a person's past experiences on behavior change. This theory is the most appropriate for the implementation of an ergonomics based training program in the microbrewery industry. The primary goal of the students' proposed project idea is to improve ergonomics in individuals employed at microbreweries by considering their environment and implementing preventative strategies in order to influence behavior change. The SCT has been used successfully as the underlying theory for behavior change in many areas, one being pain control. Pain is a key aspect of the ergonomics training program. While preventative strategies and education of proper body mechanics is delivered to improve ergonomics, the program also looks to reduce musculoskeletal disorders. When looking at ergonomics and musculoskeletal disorders, pain is the first factor to be considered.

Application to Ergonomic Training in Microbreweries

According to the Brewers Association, 9,247 breweries were operating in the United States in 2021 (Brewers Association, n.d.). As the brewery industry grows and ages, so do its challenges, including the safety, health, and wellness of its workers. Individuals working in the service industry are typically expected to work long hours and often engage in improper body mechanics for extended periods of time. One of the

most common challenges to healthy ergonomics in the industry are repetitive motions; lifting heavy of awkward objects and standing in awkward postures caused by leaning, reaching, or bending. Due to these issues, workers in this industry are prone to musculoskeletal disorders, making ergonomics the top reason for injury claims.

Current literature indicates there is insufficient evidence to support the efficacy of preventative strategies to reduce work-related injuries among individuals in the brewery industry. However, there is research suggesting ergonomic programs can reduce musculoskeletal injuries for workers in the food service industry, many of whom share overlapping/similar tasks as employees at breweries (NOISH, 2017; Filiaggi & Courtney, 2003). One of the reasons why small companies do not consider ergonomic evaluations as a way to improve processes and increase productivity is the lack of ergonomic knowledge and successful examples of benefits obtained by the application of ergonomic principles (Nino et al., 2021).

The Social Cognitive Theory (SCT) integrates several concepts and processes such as reciprocal determinism, behavioral capability, expectations, self-efficacy, observational learning (modeling), and reinforcements. These are all concepts that are applied to the students' proposed project idea of improving ergonomics in the microbrewery industry. Reciprocal determinism considers multiple ways to promote behavior change, including making adjustments to the environment or influencing personal attitudes. Some of these methods may include education on what ergonomics is and its importance for long term musculoskeletal health or creating posters and pamphlets for the workspace.

Behavioral capability involves promoting mastery learning through skills training. This is a vital portion of the intervention plan as appropriate education and training is required in order to improve ergonomics within the microbrewery industry. Techniques such as lifting, bending, and proper posture are key skills that the students' will educate and model to the microbrewery workers' in order to reach the desired behavior. This also follows the concept of observational learning (modeling) where individuals watch the actions of others in order to learn and perform the targeted behavior. A strategy to achieve self-efficacy in the SCT is approaching behavior change in small steps to ensure success and using reinforcements to promote and increase the likelihood of engaging in the provided strategies to behavior change. This also

relates to the students' proposed project idea as ergonomic training and preventative strategies will be slowly implemented over a fourteen week period.

Reinforcement will need to occur through buy-in from the stakeholders regarding the importance of ergonomics. A culture of wellness will need to be reinforced by staff and management for everyone to continue utilizing the program's education. Additionally, an application will be available to each employee that will serve as a tracking device and journal for pain and daily ergonomic activities. This will help employees become aware of ergonomic concerns and reinforce why an ergonomic program is important for musculoskeletal injury and pain prevention.

Program Development Guidance in Literature

Much of the literature surrounding microbreweries is based on case studies of specific breweries (Nino et. al., 2021; Jones, et. al., 2005). Steve Finnie is the owner of Little Thistle Brewing Company in Rochester, Minnesota, and also a Doctor of Physical Therapy (Finnie, 2019). He has created a culture of wellness surrounding ergonomics in order to support his staff and reduce injuries. At his brewery, his staff perform stretches regularly and have access to theraband and theraband exercises for strengthening. His suggestion for a program to implement to improve a culture of wellness around ergonomics is "lifting education, frequent rest breaks – microbreaks, brewhouse exercises (15 mins), daily stretching exercises, core strengthening, adequate hydration, yoga classes/core strength, breathing and relaxation, [and] meditation" (Finnie, 2019). These activities will help inform the education and structure given to the breweries as long-term preventative strategies to implement in order to reduce ergonomic deficits.

Kelby (2014) discussed how to implement an effective ergonomic program within an organization. One of the key concerns is bringing ergonomics into the core element of each job, rather than externally applying it only to job tasks. One way of implementing this is to train management to understand the value of ergonomics and musculoskeletal protection, as well as integrating ergonomic protection requirements into job descriptions (Kelby, 2014). The National Institute for Occupational Safety and Health (NOISH) created an ergonomic program structure for organizations to follow in 1997 and updated it in 2017. They outline seven steps to follow in order to effectively implement a program (NOISH, 2017). This structure will be

followed throughout the implementation of this program and management will be educated on the value of continuing to reevaluate and incorporate ergonomic consideration into each element of occupational activities in the workplace.

Needs Assessment

The needs assessment is one of the first tools to conduct when launching a public health program as it determines the *needs* to be accomplished to reach the project goals. The assessment of needs then informs a project's overall plan and approaches by helping to identify targeted strategies and prioritize resources. Currently, the analysis of the literature for the needs assessment has been in line with the author's assumptions that ergonomics in the food service industry, which encompasses breweries, is a serious concern and an area of unmet need (Lavery et. al., 2022; Nino et. al., 2022; Filiaggi & Courtney, 2003). Specifically, Lavery et. al. (202) found that brewers were experiencing a decrease in meaningful occupations across America due to musculoskeletal injuries that occurred when working. The next steps for this program will be to send a survey to brewers in Connecticut and Massachusetts in order to assess if there is an ergonomic concern in this specific region.

Application to National Prevention Strategy (NPS)

The National Prevention Strategy laid out directions and priorities for programs in the United States to align with in order to improve health and wellness for its citizens (National Prevention Council, 2011). This program aligns with the strategic direction focused on healthy and safe community environments and clinical and community preventive services. This is due to the program's focus on educating the brewery workforce in order to improve musculoskeletal preventive strategies and integrating ergonomic knowledge into different aspects of the breweries, for example by training the owners, managers, breweries, and front of house staff.

This program will also follow the strategic priorities of the National Prevention Strategy (National Prevention Council, 2011). Active living will be prioritized by implementing stretching and exercise breaks in the daily work routine. Preventing musculoskeletal injuries will also help staff improve engagement in daily activities, which could include elements of active living for the individual (Lavery, et. al., 2022). The

program will also prioritize injury free living due to its nature as a preventative program for musculoskeletal injuries for the staff at microbreweries. Additionally, the program will prioritize mental and emotional wellbeing. This may be implemented directly by setting up yoga or meditation classes or indirectly by improving pain and injury among the workforce, depending upon the needs of the organization (Finnie, 2019; Lavery, et. al., 2022).

Application to Occupational Therapy Practice Framework IV (OTPF4)

The Occupational Therapy Practice Framework IV (OTPF4) clearly defines the categories of occupations that occupational therapists would and should address including activities of daily living (ADLs), instrumental activities of daily living (IADLs), rest and sleep, education, work, play, leisure, and social participation (AOTA, 2020). As occupational therapists, it's important to refer to the OTPF4 when planning and implementing an ergonomics training program in order to develop a program that achieves the health, wellbeing, and participation of employees in the microbrewery industry.

The OTPF4 highlights several aspects that are directly addressed in the ergonomics training program including job performance and maintenance, community participation, positioning the body, obtaining and holding objects, and moving self and objects (AOTA, 2020). As the program focuses on improving ergonomics, it's important to consider the required work skills and patterns when adapting the environment and providing new strategies in order to still be successful in the workplace. The center of the students' intervention involves educating on proper body mechanics by targeting the most common tasks that individuals employed in microbreweries engage in. These are typically repetitive tasks that require reaching, bending, lifting, stabilizing, transporting, and coordinating; all aspects apart of the OTPF4.

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Appendix P

Doctoral Experiential Capstobe Student Learning Objectives & Evaluation Plan

DOCTORAL EXPERIENTIAL CAPSTONE STUDENT LEARNING OBJECTIVES & EVALUATION PLAN

This Experiential Learning Plan and Evaluation requires documentation of a formal evaluation mechanism and objective assessment of the student's performance during and at the completion of the doctoral experiential component. The student, the faculty mentor, and the site mentor collaborate to ensure completion of the doctoral experience.

Student Name: Clara Jayne Davenport, OT/s
DEx Capstone Western New England University DEx Capstone
Dates: April 8, 2024 – July 12, 2024
DEx Capstone Site Mentor: Nicole Lavery, OTD, OTR/L, CKTP, CEAS
DEx Capstone Faculty Mentor: Erin Murray, OT, OTD-PP, OTR/L

WNE OTD Learning Objectives: What does the student want/need to know? What skills does the student need to develop?

Evidence of Accomplishment: How will performance be measured and evaluated and by whom? Name the activity, project, or skill that will be accomplished. Identify the target date of completion. At midterm and final, present evidence of progress and/or accomplishment

Progress: Site and faculty mentor will rate student's progress at midterm and final

Comments: The faculty and site mentors and the student should provide written comments regarding the student's progress on each objective at midterm and final

Initial Approval of DEx Capstone Student Learning and Evaluation Plan

I agree with the above-stated objectives and feel that all learning objectives are obtainable within the fourteen (14) - week timeframe. I believe that the stated objectives encompass all aspects of the student role in this doctoral experience. I understand that the site mentor or student can add additional objectives at any time as the situation and experience dictate, with the approval of the faculty advisor. Any objectives that are proposed to be removed will need to be approved by the faculty mentor.

Site Mentor Signature Date 4/12/24 Nicole L. Lavery, OTD, OTR/L	Student Signature Date: 04/11/24
OTD Faculty Date 4/12/2024	OTD Doctoral Experiential Capstone Coordinator:

	Date: 4/15/24

LEARNING OBJECTIVES & EVALUATION PLAN

WNE OTD Objective #1 Document my experience in collaboration for program or service delivery with professionals and/or members of consumer groups who are not occupational therapists. This includes being able to negotiate the role of occupational therapy as part of an interprofessional team.	
Planned activity or Methodology *Delivering a virtual ergonomics program to brewery workers using educational modules in order to reduce the likelihood of musculoskeletal injuries to improve quality of life and participation in activities of daily living (ADLs), as well as improve productivity within the organization.*	
Who is responsible? *Makayla Descault, OT/s & Clara Davenport, OT/s*	
What resources are needed? *Laptop, research information, activity analysis*	
What is the timeline? *14 weeks*	
Evidence of accomplishment *Created and delivered online ergonomic program to brewers*	
Midpoint ☐ Accomplished X Making Progress ☐ Not Progressing ☐ Needs Attention	Comments

Final X Accomplished ☐ Making Progress	Comments: program was created and sent out to brewers. Program was well done, clear and based on evidence.

☐ Not Progressing ☐ Needs Attention	
WNE OTD Objective #2 Documentation of a needs assessment for a particular population and using said assessment as the foundation for planning a successful Doctoral Experiential Capstone Project. Additional evidence will include feedback from consumers that indicates the impact of the project on the population they represent.	
Planned activity or Methodology *Conducting and updating needs assessment*	
Who is responsible? *Makayla Descault, OT/s & Clara Davenport, OT/s*	
What resources are needed? *Access to target population, online databases, updated survey from Brewers Association*	
What is the timeline? *Weeks 1-5*	
Evidence of accomplishment *Updated needs assessment completed and survey sent out through state brewing guilds to further assess needs of the community*	
Midpoint ☐ Accomplished X Making Progress ☐ Not Progressing ☐ Needs Attention	Comments Student has made substantial progress and completed the needs assessment. Student will update as needed throughout the program.

Final	Comments:
X Accomplished ☐ Making Progress ☐ Not Progressing ☐ Needs Attention	Needs assessment completed

WNE OTD Objective #3	
Demonstrated proficiency with the use of personal computers, learning platforms, electronic health records and assistive technology sufficient to fully document the Doctoral Experiential Capstone Project for WNE as well as for members of the population served by that project.	
Planned activity or Methodology *Research conducted using online data bases, as well as completing and uploading the planned activities for the doctoral experiential capstone. Additionally, creating a virtual educational module and delivering it to brewers around America.*	
Who is responsible? *Clara Davenport, OT/s*	
What resources are needed? *Wi-Fi, laptop, research data base*	
What is the timeline? *14 weeks*	
Evidence of accomplishment *Utilized online platforms independently including Edapp, Google Forms, Google Sheets, and using online research platforms. Additionally utilized email and google search to contact brewers and state guilds.*	
Midpoint ☐ Accomplished X Making Progress ☐ Not Progressing ☐ Needs Attention	Comments

Final X Accomplished ☐ Making Progress ☐ Not Progressing ☐ Needs Attention	Comments: The online module utilized a program new to the student. The student demonstrated proficiency with this platform
WNE OTD Objective #4	

Recognize and be able to describe the diverse systems of service delivery that are most cost-effective and considerate for health, social, and educational settings, both traditional and nontraditional. through both clinical and reflective writing, be able to articulate a sensitivity to cultural, linguistic, and other diversities and describe solutions for care disparities.	
Planned activity or Methodology *Skilled observation, research of cost-effective preventative strategies for breweries to implement, maintaining awareness of health literacy.*	
Who is responsible? *Clara Davenport, OT/s*	
What resources are needed? *Access to target population, online databases*	
What is the timeline? *14 weeks*	
Evidence of accomplishment *The creation of the online ergonomic program offers a low (free) cost option for ergonomic training. The program was created for individuals not affiliated with health care. Language used and definitions were included.*	
Midpoint ☐ Accomplished X Making Progress ☐ Not Progressing ☐ Needs Attention	Comments

Final X Accomplished ☐ Making Progress ☐ Not Progressing ☐ Needs Attention	Comments: Online module was free and offered a proficient training option for the desired population
WNE OTD Objective #5	

Document the ability to work with others to identify meaningful objectives, organize, manage, and motivate people and resources, communicate effectively, and supervise action to accomplish stated program or service goals.	
Planned activity or Methodology *Create and perform educational preventive programs with peers.* *Recruit and establish connections with a diverse group of brewers.*	
Who is responsible *Clara Davenport, OT/s*	
What resources are needed? *Access to target population, laptop*	
What is the timeline? *14 weeks*	
Evidence of accomplishment *Worked with research partner, site mentor, and faculty mentor to accomplish milestones throughout the doctoral experience. Communicated with brewers and owners via phone and email for task analysis portion and throughout other portions of the capstone.*	
Midpoint ☐ Accomplished X Making Progress ☐ Not Progressing ☐ Needs Attention	Comments Student has done extensive research in preparation for their program.

Final	Comments:
X Accomplished ☐ Making Progress ☐ Not Progressing ☐ Needs Attention	Completed the program and received input from the population

WNE OTD Objective #6:
Through both clinical and reflective writing, be able to articulate the therapeutic/clinical reasoning (procedural, interactive, narrative, ethical, scientific, pragmatic) process that I use during planning, delivery, and evaluation of population-based and evidence-driven occupational therapy services. Demonstrate the ability to implement, in existing programs, and plan for in developing programs, an occupational therapy process that is occupation based, client centered, culturally sensitive, and ethnically appropriate.
Planned activity or Methodology *Dissemination and synthesis of research and existing ergonomic programs in order to gather information for preventative ergonomic modules.*
Who is responsible? *Clara Davenport, OT/s*
What resources are needed? *Laptop, online database access*
What is the timeline? *14 weeks*
Evidence of accomplishment *Synthesized a research report, created a poster presentation, and submitted an abstract to the MAOT conference based on the findings of the program.*

Midpoint	Comments
☐ Accomplished X Making Progress ☐ Not Progressing ☐ Needs Attention	

Final X Accomplished ☐ Making Progress ☐ Not Progressing ☐ Needs Attention	Comments: Student completed their research report

WNE OTD Objective #7: Document an experiential and scholarly project that reflects the literature in the field and uses responsive, ethical models. The scholarly process and results should be made accessible to the college and the community, especially to the population served by the project. A report of the project, presented in a professional format that others can replicate or build upon, will be evidence of accomplishment.	
Planned activity or Methodology *Poster presentation* *Literature review* *Needs assessment* *Research paper or other scholarly components* *Field notes and skilled observation documentation*	
Who is responsible? *Clara Davenport, OT/s*	
What resources are needed? *Access to research papers and journals, access to project population, laptop*	
What is the timeline? *14 weeks*	
Evidence of accomplishment *The final report will be available on the D'Amore library database, the poster and all other scholarly work is available on the student's e-portfolio.*	
Midpoint ☐ Accomplished X Making Progress ☐ Not Progressing ☐ Needs Attention	Comments
Final	Comments

X Accomplished ☐ Making Progress ☐ Not Progressing ☐ Needs Attention	
WNE OTD Objective #8: Through both clinical and reflective writing, be able to articulate a clear awareness of my own personal and professional strengths and boundaries and identify supports and strategies for goal achievement.	
Planned activity or Methodology *Reflective assignments; meetings with my faculty and site mentor*	
Who is responsible? *Clara Davenport, OT/s*	
What resources are needed? *Faculty and site mentor expertise; Evidenced-based strategies and resources.*	
What is the timeline? *14 weeks*	
Evidence of accomplishment *Completed through reflective assignments submitted to my program and through meetings with my faculty and site mentors.*	
Midpoint ☐ Accomplished X Making Progress ☐ Not Progressing ☐ Needs Attention	Comments Student has been making great progress with learning objectives.
Final X Accomplished	Comments

☐ Making Progress ☐ Not Progressing ☐ Needs Attention	

WNE OTD Objective #9 The researcher will demonstrate proficiency in delivering health and wellness education regarding lifting kegs and grain bags in the workplace environment with proper body mechanics/posture through a developed ergonomics program to decrease work-related pain and injury incidence.
Planned activity or Methodology *Virtual ergonomic modules* *Additional education relating to reduction of musculoskeletal injury (posters, manual)*
Who is responsible? *Clara Davenport, OT/s*
What resources are needed? *Canva, online databases, laptop*
What is the timeline? *14 weeks*
Evidence of accomplishment *Created sections of ergonomic module focused on grain lifting and keg lifting, performed systematic review on research related to ergonomics and back pain, completed task analysis and REBA on grain and keg lifting.*

Midpoint	Comments
☐ Accomplished X Making Progress ☐ Not Progressing ☐ Needs Attention	

Final	Comments
X Accomplished ☐ Making Progress ☐ Not Progressing ☐ Needs Attention	

WNE OTD Objective #10:
By the end of the ergonomics orientation, participants will display increased knowledge on pain reduction strategies by utilizing proper ergonomics when lifting and reaching in the workplace environment as measured by pre / post questionnaire.
Planned activity or Methodology *Pre and posttest questionnaire, as well as competency assessments throughout ergonomic modules*
Who is responsible? *Clara Davenport, OT/s*
What resources are needed? *Canva, online databases, laptop*
What is the timeline? *14 weeks*
Evidence of accomplishment *Results from the pretest/posttest surveys for the ergonomic program did show that there was improved reported knowledge about ergonomics in the brewing workspace.*

Midpoint	Comments
☐ Accomplished X Making Progress ☐ Not Progressing ☐ Needs Attention	

Final	Comments

X Accomplished ☐ Making Progress ☐ Not Progressing ☐ Needs Attention	

WNE OTD Objective #11 By the end of the ergonomics program, participants will be able to identify three strategies to reduce workplace injury utilizing preventative techniques (e.g. stretching, equipment, back brace) as measured by pre / post questionnaire.	
Planned activity or Methodology *Qualitative component of pre/posttest questionnaire to assess participants understanding of preventative strategies for musculoskeletal and repetitive injuries*	
Who is responsible? *Clara Davenport, OT/s*	
What resources are needed? *Laptop; AOTA webinars/resources; Applied Ergonomics; The New Brewer Magazine*	
What is the timeline? *14 weeks*	
Evidence of accomplishment *The participant was able to identify the benefits of three stretches, improper body mechanics when grabbing an item, low budget items to improve joint stability, and benefits of asking for help to perform heavy lifting techniques on compency questions.*	
Midpoint ☐ Accomplished X Making Progress ☐ Not Progressing ☐ Needs Attention	Comments Student is making great gains in their understanding of ergonomics and their association with breweries.
Final	Comments

X Accomplished ☐ Making Progress ☐ Not Progressing ☐ Needs Attention	

WNE OTD Objective #12: The researcher will synthesize a systematic review of research on the correlation between poor ergonomics and neuromusculoskeletal pain and injuries, specifically spinal, in order to further knowledge and gain proficiency on the impact of ergonomics on musculoskeletal spinal function.
Planned activity or Methodology *Systematic review of research on the correlation between poor ergonomics and neuromusculoskeletal pain and injuries*
Who is responsible? *Clara Davenport, OT/s*
What resources are needed? *Laptop, online research databases*
What is the timeline? *14 weeks*
Evidence of accomplishment *Systematic review of ergonomic programs and back pain completed in order to have a better understanding of the benefits of an ergonomic program for brewing employees.*

Midpoint	Comments
☐ Accomplished X Making Progress	Student is continually reviewing evidence to have the most current research.

☐ Not Progressing ☐ Needs Attention	
Final X Accomplished ☐ Making Progress ☐ Not Progressing ☐ Needs Attention	Comments

DOCTORAL EXPERIENTIAL CAPSTONE STUDENT LEARNING OBJECTIVES & EVALUATION PLAN

MIDPOINT SITE MENTOR/STUDENT EVALUATION

Student evaluation of Site mentor, experience and self (please comment on opportunities provided, supervisory relationship and individual performance):

Dr. Lavery is a wonderful resource and always available and helpful. She has assisted with both connections and helping guide me through the creation of the survey and the needs of the population. I am trying to remain communicative and take feedback for all projects in the future.

Site mentor evaluation of student performance (Identify if all objectives have been met. If yes, please comment on students' achievement for each objective. If no, please identify why goal not met):

Clara has been working efficiently throughout her experience thus far. She has implemented feedback throughout the process and has effectively implemented the needs assessment survey to the brewery population. She has been communicative and open with her questions and findings. I look forward to the results of the survey and the teaching modules.

Please check one:

X Sufficient progress has been made on the identified learning objectives and I recommend that the student continue this Doctoral Experiential Capstone.

_____The Student has NOT progressed towards achievement of the identified objectives for the Doctoral Capstone Experience. It is recommended that this Student's Learning and Evaluation Plan be reviewed and revised as needed

Site Mentor Signature Date: 5/28/24 Nicole L. Lavery, OTD, OTR/L	Student Signature Date: 5/28/24
OTD Faculty Date 5/24/24	OTD Doctoral Experiential Capstone Coordinator Date5/28/2024

DOCTORAL EXPERIENTIAL STUDENT LEARNING OBJECTIVES & EVALUATION PLAN

FINAL SITE MENTOR/STUDENT EVALUATION

Student evaluation of Site mentor, experience, and self (please comment on opportunities provided, supervisory relationship, and individual performance):

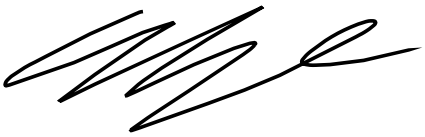
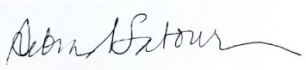
Dr. Lavery has been a support and asset throughout the doctoral experience. She has gone above and beyond to help spread the word of our survey and program, as well as speak to the Brewers Association Safety Committee about the program. Additionally, she is always available to brainstorm and discuss issues and concerns. I have accepted feedback for assignments and created and delivered an ergonomic program for brewers.

Site mentor evaluation of student performance (Identify if all objectives have been met. If yes, please comment on students' achievement for each objective. If no, please identify why goal not met):

Please check one:

x Sufficient progress has been made on the identified learning objectives and I recommend that the student continue this Doctoral Experiential Capstone.

_____The Student has NOT progressed towards achievement of the identified objectives for the Doctoral Capstone Experience. It is recommended that this Student's Learning and Evaluation Plan be reviewed and revised as needed

Site Mentor Signature Date: 7/15/24 Nicole L. Lavery, OTD, OTR/L	Student Signature Date 7/12/24 
OTD Faculty Date: 7/15/24 	OTD Doctoral Experiential Capstone Coordinator Date  7/16/2024