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Remote Work Ergonomics: A Doctoral Capstone Experience

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Remote Work Ergonomics: A Doctoral Capstone Project

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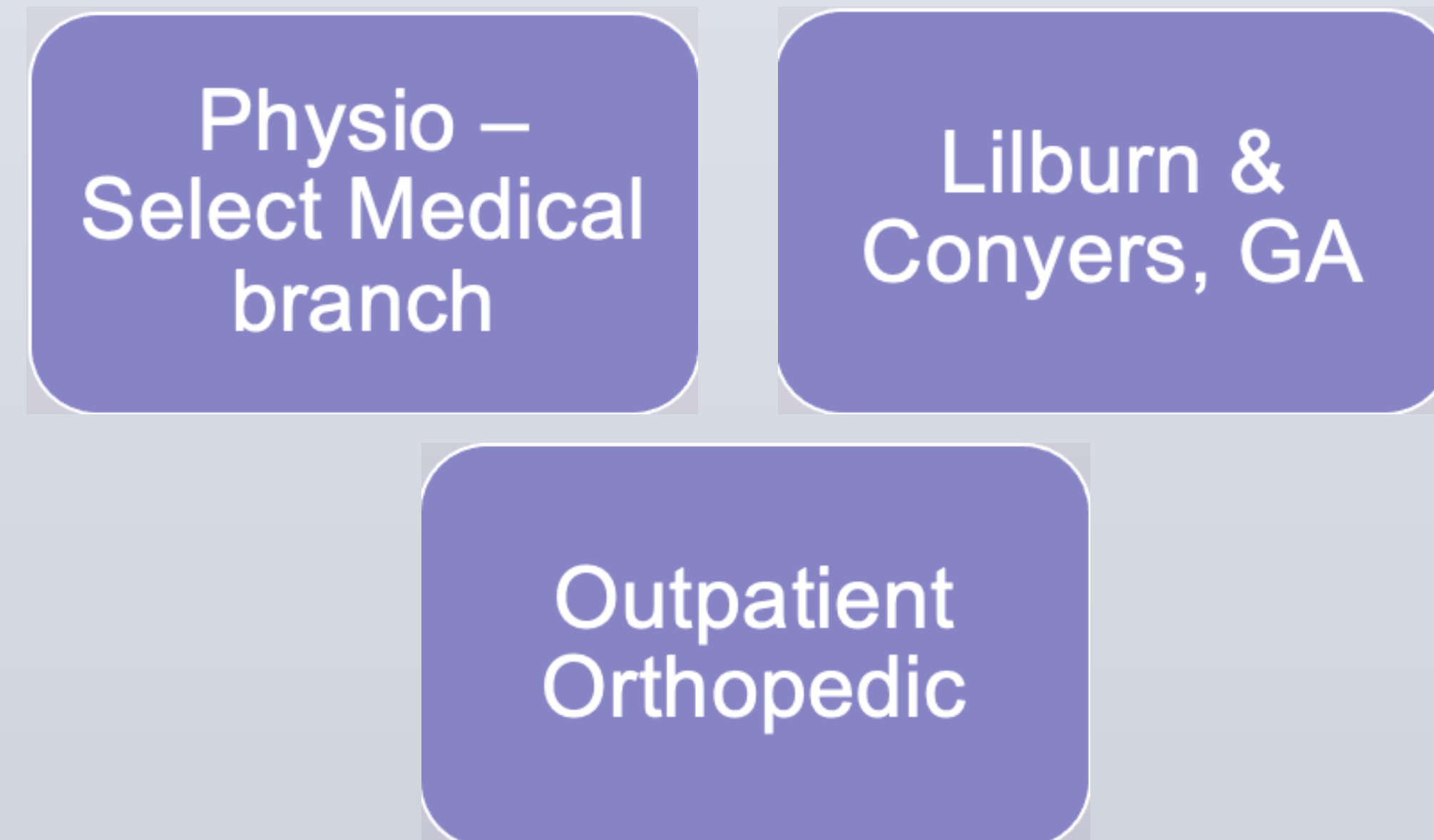
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Introduction

- Cumulative trauma disorders (CTDs) are injuries of the musculoskeletal system and are caused by repetitive motions, forceful exertions, vibration, and other situations that may damage bone and fascia.
- Musculoskeletal disorders (MSDs) are injuries that affect the human body's muscles, nerves, tendons, joints, cartilage, and spinal discs.
- Since the COVID-19 virus, more companies have shifted from in-person office work to work-from-home. Typically, the home office set-up is a key aspect of remote work; however, most home office set-ups are not ergonomically correct which can lead to the onset of CTDs or MSDs. Occupational musculoskeletal disorders arise from "improper ergonomic working environments."

Capstone Site Description



Summary of Needs Assessment

- Dugar et al. (2021)
 - 75% of participants worked 7-9 hours without taking breaks.
 - Of the participants that took breaks, only 7% used their break time to stretch and only 21% used their break time to walk around.
 - 9% of participants laid in bed while working, 16% sat on the sofa, and 17% sat on their bed which exhibited that there was a lack of knowledge of sitting posture.
- Okuyan & Begen (2020)
 - Improper ergonomic working environments lead to occupational musculoskeletal disorders.
- Ahmed et al. (2022)
 - 50% of participants reported experiencing discomfort in various body parts during work from home office.
- Kalakatawi & Aziz (2021)
 - 12% increase in traumatic nerve injuries during the pandemic.

Literature Review Summary

Ergonomics	<ul style="list-style-type: none"> ▪ Improper workstation ergonomics can lead to shoulder, neck, arm, and wrist pain (Ahmed et al., 2022) • Proper ergonomic workspaces help employees work better from home (Ahmed et al., 2022) • Computer users are at more vulnerable to potential health risks due to prolonged use of computer, inappropriate workstation design and posture (Hamid et al., 2022) • Results showed that there was a significant reduced ergonomic risk observed for both shoulders when working in an ergonomically optimized workspace (Holgreve et al., 2022)
Pain	<ul style="list-style-type: none"> ▪ Home and hybrid workers displayed an increased risk of pain in all body areas when compared to location workers (Bosma et al., 2023) • Prolonged computer use compromises the health of the computer users which include neck, back, arm, and shoulder pain as well as muscle and joint issues with improper workstation design, poor posture and remaining in a steady position for extended periods of time (Hamid et al., 2022) • Pressure is created between the wrist and workstation along with the repetitive motion of the wrist and digits as well as the writ extension over a long period of time leads to an increased vulnerability to injury while typing (Ahmed et al., 2022)
Ergonomic Recommendations	<ul style="list-style-type: none"> ▪ To decrease muscle activity in the upper extremities, OHS requirements recommend using a forearm support when using a mouse and keyboard (Hamid et al., 2022) • Important factors to consider to ergonomically optimize a workspace include chair height, seat pan depth and angle, desk height, mouse placement, type of keyboard, monitor positions, and balanced workstation (Emerson et al., 2021) • Place computer/laptop screen should have a constant balance between head/neck and hand/wrist postures (Okuyan & Begen, 2021)

Capstone Project Description & Outcomes

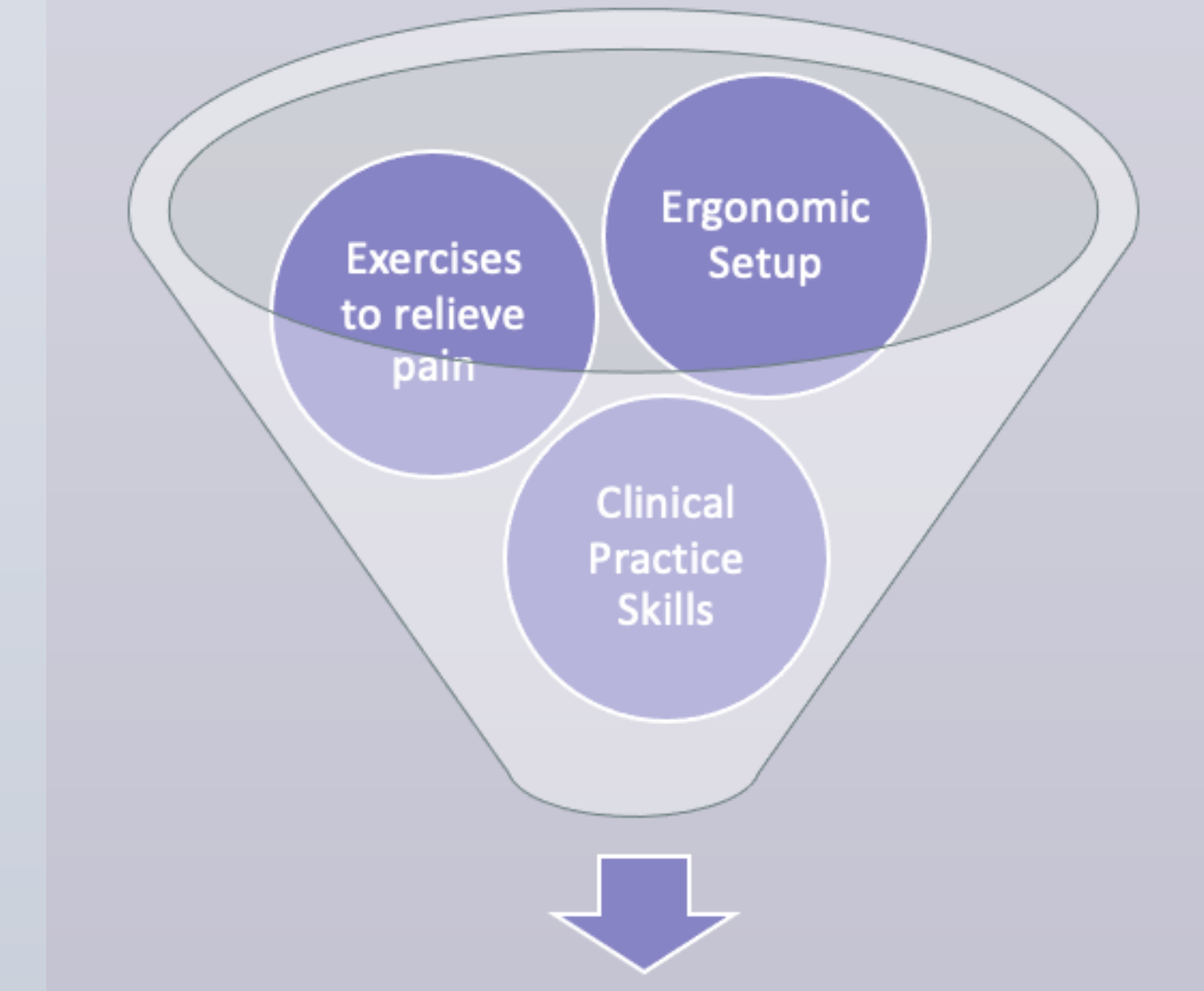


Figure 1: Ergonomic Recommendation Brochure used to disseminate to target audiences.

Capstone Goals Achieved

All the goals I set for myself were achieved. There were a few changes to one of the goals along the way and the addition of another goal towards the beginning of capstone.

1. Identified and appraised 5 articles related to CTDs or MSDs.
2. Created a literature to disseminate and present to at least 2 target audiences.
3. Completed a certification related to hand therapy.
4. Gain more knowledge on specific UE diagnoses and how to treat them.

Implications for OT Practice

Remote work has become the "new norm" for many companies including students completing their education. Subsequently, with the rise of work-from-home employees, there is an increased risk of developing symptoms that are consistent with CTDs or MSDs. To prevent these disorders from occurring, employees must maintain an ergonomically correct workstation. This includes using a forearm support when using a mouse and keyboard, keeping most frequently used items closer to you, ensuring the wrists are in neutral position, and taking frequent rest breaks to stretch and complete some exercises.

Exercises for Remote Workers

	Wrist extensor stretch: Extend your elbow outwards with the palm pointing towards the ground. Use your other hand to gently bend your wrist further until you feel a moderate stretch in your forearm. Hold for 10-15 seconds.
	Wrist flexor stretch: Repeat the steps above, except begin with your palm facing upwards.
	Prayer stretch: Put your palms together in front of your chest. Slowly lower your hands towards your waist keeping your hands close to your stomach and palms together until you feel a moderate stretch in your forearm. Hold for 10-15 seconds.
	Wrist flexion: Hang your forearm off a sofa, table, or any surface with the palm facing upwards. Grab a weighted object of your choice (ex. 2lb weight, water bottle, rolled towel, can of beans, etc.) and place in palm of your hand. Slowly curl your wrist until you feel a slight stretch. Hold for 3 seconds.
	Wrist extension: Repeat the steps above, except begin with your palm facing down. Your other hand can be placed on your forearm to provide support to focus on the wrist motion.

Figure 2: Exercises for remote workers used to disseminate to target audiences.

REFERENCES & ACKNOWLEDGMENTS

*References Available Upon Request

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