

Doctoral Capstone Experience Site

Advanced Therapy Center (ATC) is an outpatient clinic located in Torrance, CA, specializing in the rehabilitation of hand and upper extremity injuries.

- **Needs Assessment:** 1) Clinical Practice Skills: IASTM, 2) Community Awareness of OT Profession, 3) Mental Health and Hand Therapy
- **Learning Objectives:** 1. Creating an IASTM guide, 2. Increasing Clinical Practice Skills, 3. Increasing Interprofessional Communication via In-service

Introduction

- Upper extremity musculoskeletal disorders (MSK-D) and work-related MSK-D are highly prevalent, and its estimated economic burden is 45-54 billion dollars annually (CDC, 2020)
- Instrument-assisted soft tissue mobilization is a technique that utilizes tools to deliver compressive stroke techniques to manipulate the skin, myofascia, muscles, and tendons to facilitate healing.

Literature Review

- **Current Literature Review:** Systematic review assessed 13 randomized controlled trial (RCT) and concluded that IASTM is effective in ↓ pain, ↑ increase range of motion (ROM) and ↑ patient-reported outcomes (Seffrin et al. 2019)
- **Preparatory Method:** A meta-analysis analyzed 15 different Graston Technique ® research papers and concluded that IASTM treatment was only effective when treatment was combined with exercise (McKivigan & Tulimero, 2020).
- **Hand Therapy Case Study:** a 55-y.o. client with chronic finger joint injury was treated using IASTM & after 6x30min treatments outcomes achieved: ↓ pain, ↓ edema, ↑ ROM, ↓ DASH scores and return to guitar playing (Loghmani et al., 2015)
- **Additional Features:** 1) Light strokes stimulate a neurophysiological response (Cheatham et al., 2019b) & 2) using 60/90 degrees activates a kinetic thermal response from tissue (Fousekis et al., 2020)

Research design

- Observational research design utilizing convince sampling to measure the effectiveness of IASTM as a prep method in a hand therapy setting.
- **Inclusion criteria:** Adults over 18 y.o. enrolled at ATC, candidates for conservative hand therapy, no contraindications or precautions for IASTM **Sample:** 19 patients with UE injury (i.e. tendonitis, tennis elbow, carpal tunnel) **Measures:** Pre/Post measures of numeric pain scale (NPS), range of motion (ROM), patient reported outcome (PROM)

Procedure

- Protocol: 1) Introduction/education 2) Assessment 3) IASTM intervention 4) re-assessment 5) cont. with multimodal treatment
- IASTM intervention guided by IASTM intervention goals and IASTM grading system outlined in IASTM guide
- IASTM was applied to the upper extremity kinetic chain, site of injury, and related fascial structures for 10-15 minutes depending on the clients' needs

Results

- Objective: NPS & ROM
 - Results of the aggregated data show that IASTM as a preparatory method was able to **significantly decrease pain** (p-value <.001; alpha level of .05) , and **significantly increase ROM** (p-value = .003; alpha level of .05).
- Subjective PRO Themes (5):

1) Improved Pain Tolerance

• 51% of patients reported a perceived increase in pain tolerance
• "I felt like that tool helped lower my pain" or "I was feeling a sharp pain over this bone when I pressed on it but after that (IASTM treatment) I don't feel that pain anymore"

2) Improved Sensation

• 19% of patients reported improved sensation or reduction of paresthesia
• "I was feeling very sensitive over that area when I came in but its feeling about the same as it is on the other side now"

3) Improved Perception of Mobility

• 19% of patients reported a perceived improvement in ROM
• "it feels looser" or "my hand does not feel as stiff"
• Fascial improvement, "After that treatment I don't feel the pull from my scar anymore and now it definitely feels like the restriction of ROM is coming from my joint."

4) Improved Functional Hand Use-

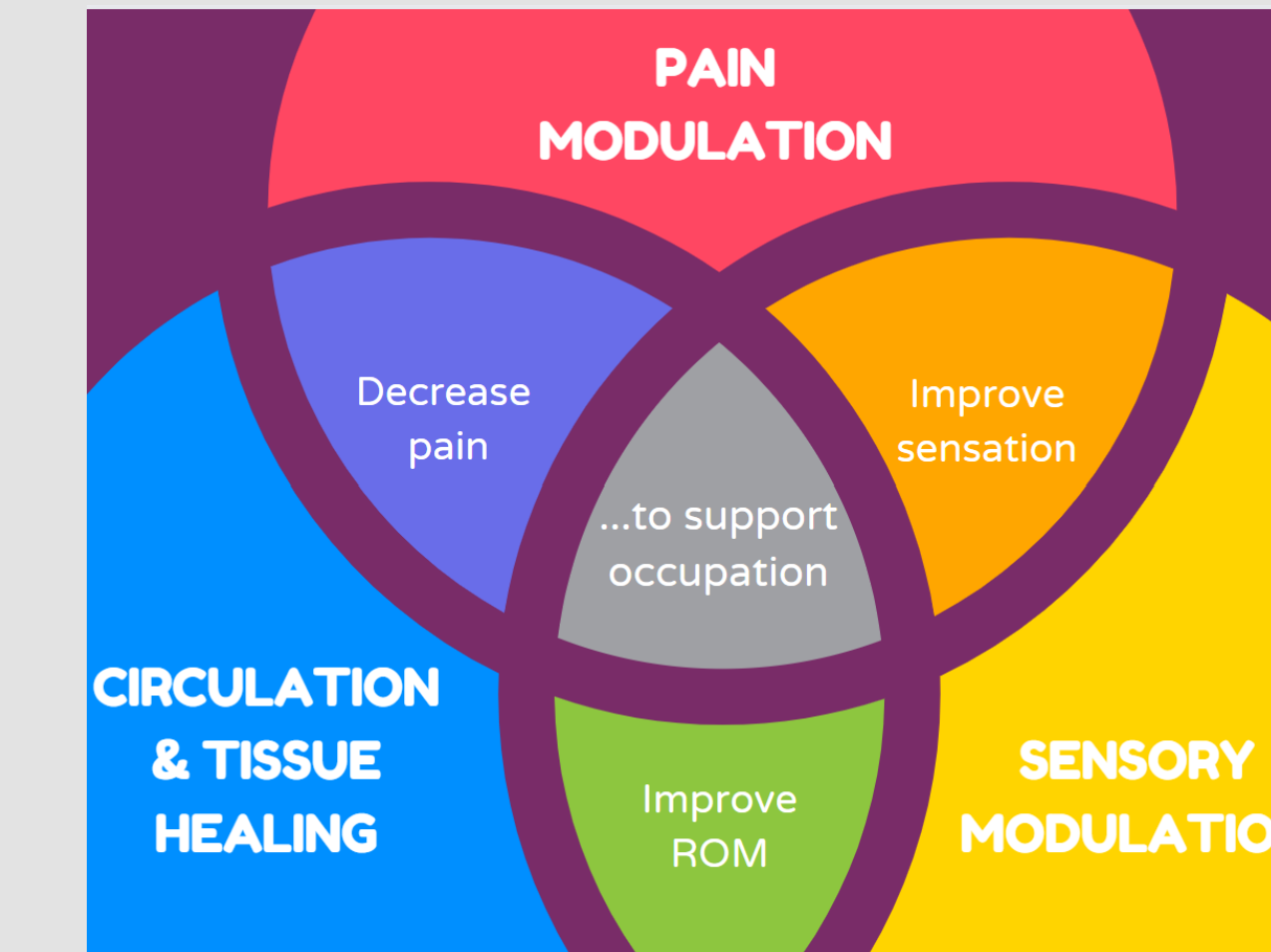
• 10% of patients reported improvements in functional hand use
• "After that last session I imminently noticed that I was less stiff and noticed that I was able to interact with my car dashboard and steering wheel much easier."

IASTM Grading System

Grades	Parameters
Grade 1 - Pain modulation and Desensitization (Cheatham et al. 2019; Ge et al. 2017)	Tool: Smaller tool, bevel up or down Angle: 10-30 degrees Pressure: Minimal Cadence: 120-140 BPM
Grade 2 - Superficial - Localized Inflammatory response and tissue healing (Kim et al. 2017)	Tool: Small - Large, bevel down Angle: 45- 90 degrees Pressure: Moderate Cadence: 110-120 BPM
Grade 3 - Deep - Localized Inflammatory response and tissue healing (Kim et al. 2017)	Tool: Small - Large, bevel down Angle: 45 - 90 degrees Pressure: Moderate to maximum Cadence: 110-120

Intervention Goals, IASTM + OT Process, & Sample

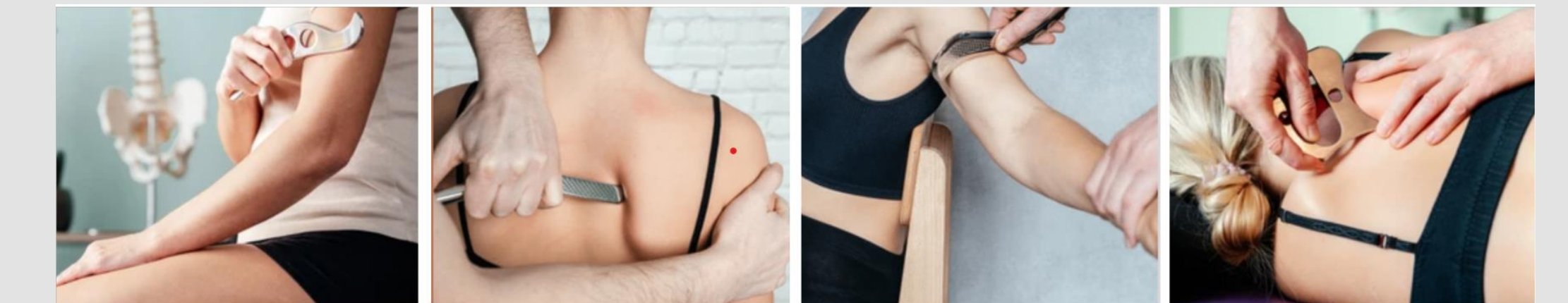
IASTM Intervention Goals



IASTM and OT Process



Sample IASTM treatment



Implications to OT practice

- IASTM as a preparatory method for conservative hand therapy management was successful in ↓ pain, ↑ ROM and ↑ PROM which aligns with current research evidence.
- IASTM adds therapeutic value to hand therapy treatment by allowing clinicians to address the clients' physical barriers which lead to an opportunity to continue building movement confidence, optimism with rehabilitation, and overall resiliency
- IASTM as a passive treatment alone is relatively weak, but results can be achieved when paired with a multimodal treatment (appropriate tissue loading, education of condition, activity modifications, occupation-based exercises, and more).
- **Limitations:** Time restrictions of the DCE resulted in a naturalistic yet limited research design, small sample size, and possible researcher bias.
- **Future Implications:** IASTM as a precatory method should be further explored by future researchers and clinicians using the IASTM guide as a foundation towards utilizing a more standardized protocol.

References



Deliverables

