

March 2020

## A virtual reality martial arts-based intervention reduces pain, drug craving, and stress in patients with opioid use disorder

Mohammed M. Faraj BS  
Wayne State University, gm4182@wayne.edu

Nina M. Lipanski  
Wayne State University, nina.lipanski@gmail.com

Elimelech Goldberg BA, DD  
Wayne State University, ap0023@wayne.edu

Hilary A. Marusak PhD  
Wayne State University, hmarusak@med.wayne.edu

Mark K. Greenwald PhD  
Wayne State University, mgreen@med.wayne.edu

Follow this and additional works at: [https://digitalcommons.wayne.edu/som\\_srs](https://digitalcommons.wayne.edu/som_srs)

 Part of the [Medicine and Health Sciences Commons](#)

---

### Recommended Citation

Faraj, Mohammed M. BS; Lipanski, Nina M.; Goldberg, Elimelech BA, DD; Marusak, Hilary A. PhD; and Greenwald, Mark K. PhD, "A virtual reality martial arts-based intervention reduces pain, drug craving, and stress in patients with opioid use disorder" (2020). *Medical Student Research Symposium*. 18.  
[https://digitalcommons.wayne.edu/som\\_srs/18](https://digitalcommons.wayne.edu/som_srs/18)

This Research Abstract is brought to you for free and open access by the School of Medicine at DigitalCommons@WayneState. It has been accepted for inclusion in Medical Student Research Symposium by an authorized administrator of DigitalCommons@WayneState.

**Title:** A virtual reality martial arts-based intervention reduces pain, drug craving, and stress in patients with opioid use disorder

**Authors:** Mohammed M. Faraj, BS<sup>1</sup>, Nina M. Lipanski<sup>2</sup>, Elimelech Goldberg, BA, DD<sup>3</sup>, Hilary A. Marusak, PhD<sup>2, 4</sup>, Mark K. Greenwald, PhD<sup>2</sup>

**Affiliations:** <sup>1</sup>School of Medicine and <sup>2</sup>Department of Psychiatry and Behavioral Neurosciences, Wayne State University; <sup>3</sup>Kids Kicking Cancer; <sup>4</sup>Merrill Palmer Skillman Institute for Child and Family Development, Wayne State University

**Keywords:** Meditation, opioid use disorder, craving, stress, chronic pain, virtual reality, methadone

**Background:** Some individuals with opioid use disorder (OUD) report high levels of pain, anxiety, stress and drug craving that may occasion relapse, reduce adherence to treatment, and reduce quality of life. This pilot study evaluated whether a novel martial arts-based intervention can lower self-reported and physiological markers of pain, anxiety, stress and opioid craving in individuals with OUD undergoing methadone maintenance treatment (MMT).

**Methods:** 15 MMT patients (11 females) completed a 12-week 'Heroes Circle' intervention that involved twice-weekly 30-min sessions centering around martial arts-based breathing and meditative techniques using therapist-assisted virtual reality (VR). Patients self-reported on five measures (pain, drug craving, anxiety, depression, anger) using a 0-10 scale before (pre) and after (post) each session. Salivary markers of inflammation (C-reactive protein [CRP]) and stress (cortisol) were collected before and after several sessions (baseline, weeks 4, 8, and 12).

**Results:** There were significant pre-post session reductions in rated pain, drug craving, anxiety and depression, and saliva cortisol ( $p < 0.05$ ). For opioid craving, there was also an effect of week such that craving decreased from weeks 1-6, increased from 7-9, and decreased again from 10-12 ( $p < 0.05$ ); there was also a session x week interaction such that the pre-post reduction in craving reached significance in weeks 1-3 only. There were no significant main effects or interactions for anger or CRP ( $p > 0.05$ ).

**Conclusions:** These preliminary results suggest VR-based, martial-arts meditative intervention is a promising approach for reducing pain, anxiety, stress and craving levels among individuals with OUD. Further controlled studies are warranted.