

# Martial Arts for Reduction of Childhood Obesity and Health Promotion

Presenter: Micah Haertner

St. David's School of Nursing, College of Health Professions, Texas State University

## Introduction

- ❖ From 1965 to 2018 the rates of obesity went from less than 5% to almost 20% (Fryar et al., 2020).
- ❖ Childhood obesity contributes to increased risk for cardiovascular disease, hyperlipidemia, hypertension, type 2 diabetes mellitus, and certain cancers (Centers for Disease Control and Prevention, 2022).
- ❖ Childhood obesity also contributes to economic burden on the healthcare industry by increasing direct healthcare cost of \$237.55 per capita yearly (Ling et al., 2022).
- ❖ Since the beginning of the COVID-19 pandemic the already increasing rates of childhood obesity doubled (Ling et al., 2022).
- ❖ Obesity in children and adolescents is defined as a BMI of 95% or greater based on Centers for Disease Control and Prevention growth charts (Centers for Disease Control and Prevention, 2021).
- ❖ In the United States the Hispanic population has a childhood obesity rate of 26.2% compared with 16.6% of white children (Centers for Disease Control and Prevention, 2022).
- ❖ Non-Hispanic Black children and adolescents have an obesity rate of 24.8% (Centers for Disease Control and Prevention, 2022).

## Findings

- ❖ Certain martial arts increased cardiovascular fitness (Brasil et al., 2020; Chainok et al., 2022; de Souza et al., 2022; Nyrć & Lopuszanska-Dawid, 2023; Pinto-Escalona et al., 2021).
  - ❖ Five of the six articles that evaluated cardiovascular fitness found an improvement over the control (Brasil et al., 2020; Chainok et al., 2022; de Souza et al., 2022; Nyrć & Lopuszanska-Dawid, 2023; Pinto-Escalona et al., 2021).
  - ❖ The martial arts that showed increases in cardiovascular fitness were Judo, Muay Thai, Karate, and Taekwondo.
- ❖ Martial arts led to an improvement in body composition
  - ❖ All four of the studies that measured body composition showed a statistically significant improvement in body composition (Brasil et al., 2020; Nyrć & Lopuszanska-Dawid, 2023; Roh et al., 2020; Saraiva et al., 2021).
  - ❖ One study indicated a body fat loss around the abdomen as well as an increase in lean muscle throughout the body (Saraiva et al., 2021).
- ❖ Reduction in BMI was not consistent across the studies.
  - ❖ Two of the studies found a reduction in BMI and significant weight loss (Roh et al., 2020; Saraiva et al., 2021).
- ❖ One study evaluated other health markers including lipids and triglycerides. They noted a reduction in these health markers (de Souza et al., 2022).

## Implications for Practice

- ❖ Obesity is a rising problem among children and adolescents
- ❖ Engaging and innovative solutions to inactivity are greatly needed to improve health in pediatric patients.
- ❖ Martial arts could be an innovative form of exercise for children and adolescents.
- ❖ Martial arts are a moderate to high intensity exercise (U.S. Department of Health and Human Services, 2018)
- ❖ Martial arts reduce body fat and improve lean muscle mass (Brasil et al., 2020; Nyrć & Lopuszanska-Dawid, 2023; Roh et al., 2020; Saraiva et al., 2021).
- ❖ Martial arts improve cardiovascular fitness (Brasil et al., 2020; Chainok et al., 2022; de Souza et al., 2022; Nyrć & Lopuszanska-Dawid, 2023; Pinto-Escalona et al., 2021).

## Purpose

The purpose of this project is to provide a systematic review of literature on martial arts as an intervention for childhood obesity and related health markers.

## PICO

In children 8-18 years, does participation in a martial arts based physical activity improve obesity-related measures such as weight, BMI, and cardiovascular fitness compared to usual interventions and other sports?

## Methods

- ❖ This literature review evaluated studies from 2017-2023.
- ❖ A review of literature was conducted using PubMed, CINAHL, MEDLINE, and ScienceDirect databases
- ❖ Search terms included "martial arts," in combination with "childhood obesity," "metabolic rates in children," "BMI," "cardiovascular fitness," "lean muscle mass," "health outcomes," "health benefits," and "physical fitness."
- ❖ Inclusion criteria included randomized controlled trials or quasi-experimental studies; the primary subjects are children or adolescents 8-18 years of age, peer reviewed, and in the English language.
- ❖ The initial search inquiry yielded 34 articles.
- ❖ 25 did not meet inclusion criteria due to study design, being a review of literature, or addressed subjects outside the age range.
- ❖ Seven articles were included in this systematic review of literature.
- ❖ The review includes 3 quasi-experimental studies and 4 randomized controlled trials.

Martial Art	BMI Reduction	Increase in lean body mass	Increase in cardiovascular fitness	Reduction in cholesterol
Judo		X	X	
Muay Thai		X	X	
Karate		X	X	X
Taekwondo	X	X		

## Recommendations

- ❖ As all studies included were conducted outside of the United States of America, some studies are needed in the United States to ensure results translate to the diverse US population.
- ❖ Most studies did not track other health markers such as blood pressure, blood glucose, or lipid levels that would be useful in determining long term health risk reduction.
- ❖ Studies with larger sample sizes should be conducted to ensure accuracy of the results.
- ❖ The studies were all relatively short duration, follow up with participants would be useful to ensure long term effects of martial arts.



References available upon request

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