

# Martial Arts for Reduction of Childhood Obesity and Health Promotion

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## 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).

## 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.

## 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).

## 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.

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		

References available upon request



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