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# Exercise Therapy for Chronic Low Back Pain

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## Abstract

Chronic low back pain (CLBP) is currently ranked as the 13th most frequent diagnosis in family practice (DynaMed Plus, 2017). The severe nature of the pain in this condition often leads providers to prescribe narcotics. While effective in the short term, opiates have significant side effects when used chronically. Other forms of management for CLBP need to be identified and utilized. The purpose of this review was to determine the role exercise therapy plays in the management of CLBP.

Four databases were searched in order to find high quality systematic reviews, meta-analyses, and randomized controlled trials (RCT) looking at exercise therapy in the management of CLBP. These databases included SPORTDiscus, Cochrane Database of Systematic Reviews, CINAHL, and PubMed. Studies chosen for this review were adult-only populations and included pain as an outcome measurement. All of the studies were published between 2010 and 2017.

After reviewing the current literature on the effects of exercise therapy in the management of CLBP, it does appear that certain forms of exercise are efficacious for pain control. The most effective forms of exercise therapy seem to be those that include a strengthening component. This is encouraging data regarding the future of CLBP management.

## Introduction

- CLBP is 13th most frequent diagnosis in family practice
- Lifetime prevalence of CLBP is around 80%
- Costs associated with CLBP are around \$19.8 billion
- 1<sup>st</sup> line treatments for CLBP:
  - NSAIDs
  - Acetaminophen

## Statement of the Problem

- 1<sup>st</sup> line treatments often fail leading practitioners to prescribe opiates
- Use of oxycodone has increased by approximately 500%
- Opiate **related deaths** has increased by nearly 4x
- The CDC has declared the current opiate crisis as the **“worst drug overdose epidemic in history”**
- Safe and effective non-pharmacological treatment routes need to be utilized

## Research Question

- What role does exercise therapy play in the management of CLBP?
- Strengthening, stretching, aerobic, & mixed exercise will be investigated
- It is expected that exercise therapy will be a successful adjunct therapy in the management of CLBP.
- A systematic analysis will look at the efficacy of various forms of exercise in regard to improvement in pain

## Literature Review

### Strength Exercises

- Strength exercises use resistance, either body weight or added weight, to stimulate muscle contraction which overtime leads to greater muscle strength

- Six studies

### Stretching Exercises

- Stretching exercises elongate muscle fibers in order to increase range of motion and flexibility

- Four studies

### Aerobic Exercises

- Aerobic exercise is considered any exercise that is aimed at increasing heart rate for an extended period of time

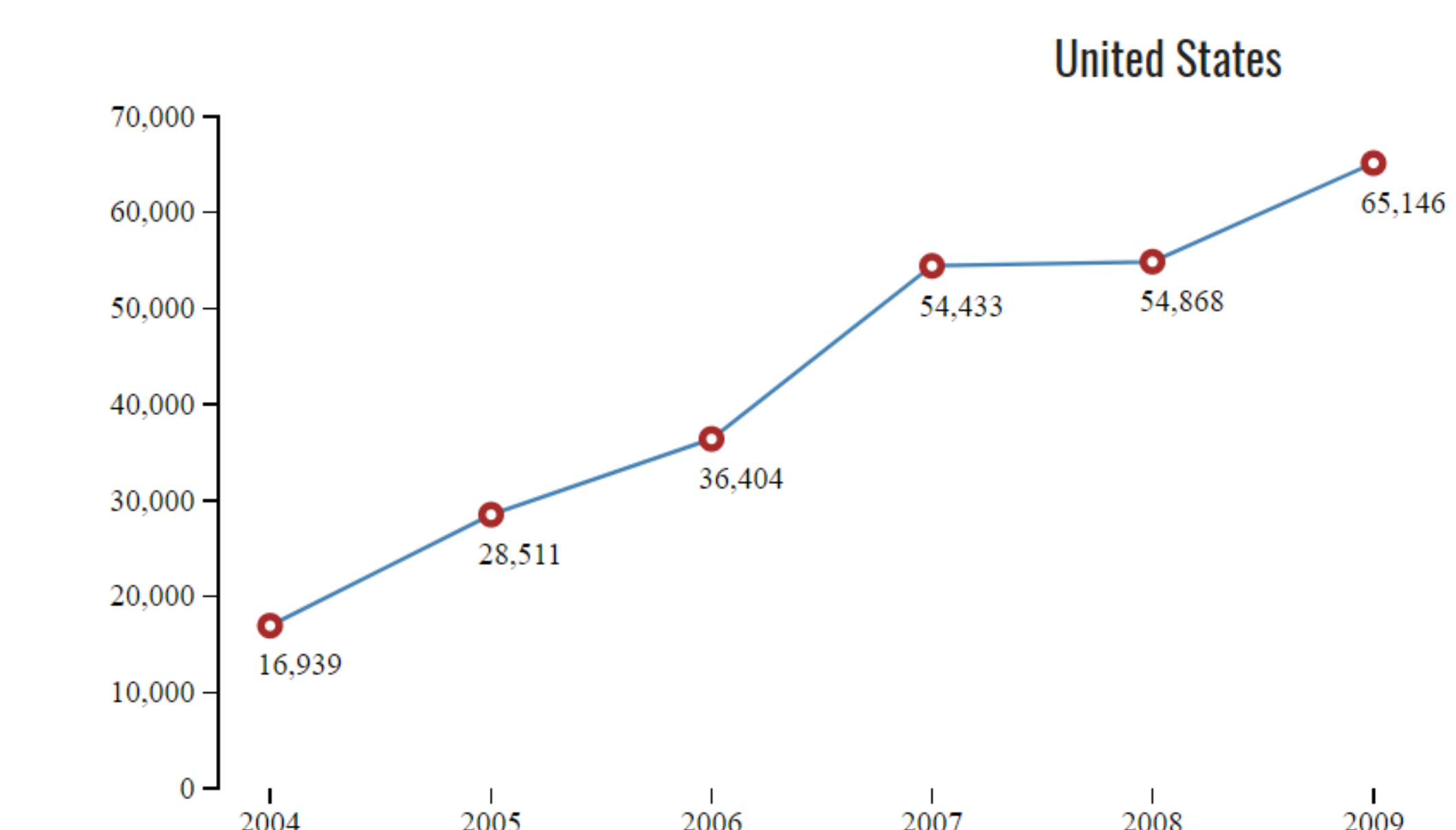
- Mixed results

- Two studies

### Combination Exercises

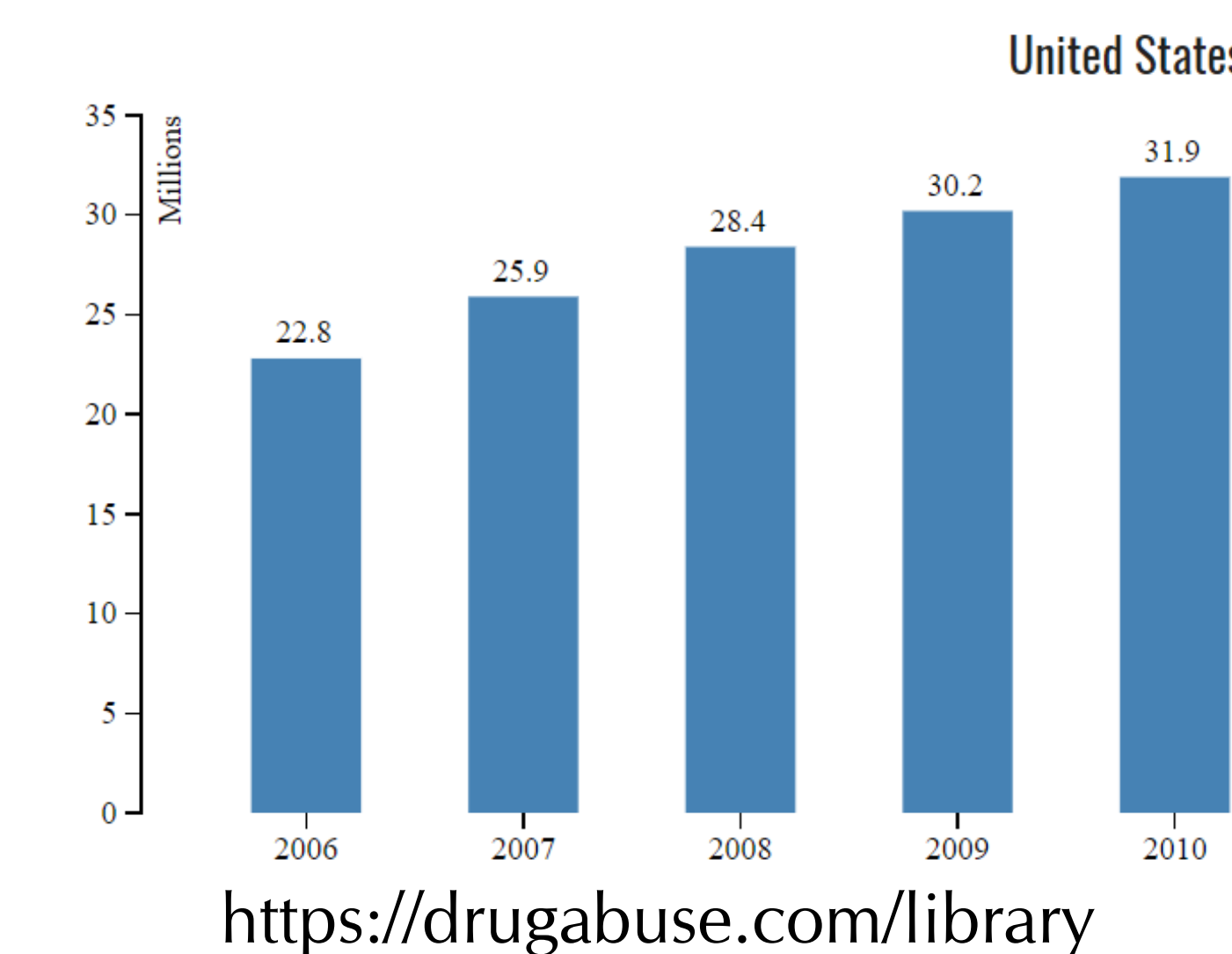
- Cochrane Systematic Review on all forms of exercises
  - All forms are slightly effective at decreasing pain
- Back School
  - No strong evidence showing benefit

Emergency room visits due to adverse reactions to Oxycodone



<https://drugabuse.com/library>

Prescriptions of oxycodone/acetaminophen by year



<https://drugabuse.com/library>

## Discussion

### Strength Exercise

- Promising results
  - Stabilization superior pain control vs. general exercise (Gomes-Neto et al., 2015)
    - Manual therapy was as effective as stabilization
  - MCE reduced pain (Kendall et al., 2014)
  - High load lifting reduced pain Michaelson et al., (2016)
  - Pilates reduced pain (Yamato et al., 2015)

### Stretching Exercises

- Global Postural Reeducation clinically & statistically significance (Lawand et al., 2015)
- Slight reductions but most likely not clinically significant
  - McKenzie method (Machado et al., 2012)
  - Yoga (Wieland et al., 2017) & (Groessl et al., 2017)

### Aerobic Exercises

- Small to moderate improvement in pain
- (Meng & Yue, 2014) & (Marini et al., 2017)

### Combination Exercises

- Small improvement in pain
- Most effective setting is health care
- (Hayden et al., 2017) & (Parreira et al, 2017)



## Applicability to Clinical Practice

- Due to rising prevalence of CLBP & opiate overprescribing alternative therapies need to be utilized
- Strengthening, aerobic & GPR exercises useful adjunct therapies to a comprehensive treatment plan
- Opiates have little or no place in the management of CLBP
- Exercise therapy should be prescribed as one of the first line treatments in a comprehensive approach to CLBP management



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