

# INPLASY

## The Impact of High-Intensity Interval Training on Lifestyle Diseases-A Scoping Review Protocol

INPLASY202480102

doi: 10.37766/inplasy2024.8.0102

Received: 22 August 2024

Published: 22 August 2024

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### ADMINISTRATIVE INFORMATION

**Support** - Self financed.

**Review Stage at time of this submission** - Completed but not published.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY202480102

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 22 August 2024 and was last updated on 22 August 2024.

### INTRODUCTION

**Review question / Objective** What effect does high-intensity interval training have on physiological markers including blood pressure, VO<sub>2</sub> max, glycemic management, and insulin resistance in persons with non-communicable diseases connected to lifestyle?

**Background** The most populous nation in the world, India, is confronted with serious issues as a result of the growing incidence of non-communicable diseases (NCDs) linked to lifestyle choices, including diabetes, obesity, and hypertension. Sedentary lifestyles and poor behaviors exacerbate these diseases, which add significantly to the burden of healthcare on a global scale. An effective solution for the management of various chronic illnesses has been identified as high-intensity interval training, or HIIT.

**Rationale** The study's justification is to address the rising incidence of non-communicable diseases (NCDs) linked to lifestyle choices in India

and around the world. There is a pressing need to investigate quick, easy, and efficient ways to reduce the risks associated with the rising prevalence of diseases including diabetes, obesity, and hypertension.

### METHODS

**Strategy of data synthesis** A total of thirty papers on various lifestyle diseases were reviewed as part of the data synthesis strategy, with an emphasis on diabetes, obesity, and hypertension. Based on their applicability and the clarity of the findings, 17 of these publications were chosen for in-depth examination.

### Eligibility criteria

1. Adults with non-communicable diseases linked to lifestyle choices, such as diabetes, obesity, and hypertension
2. Intervention: High-intensity interval training (HIIT) was the main intervention that was investigated, and its effects on different physiological markers were the main focus of the study.

3. Key health outcomes, including blood pressure, glycemic management, insulin resistance, VO2 max, lipid profiles, and other pertinent physiological markers, were the focus of the included studies.

4. Study Design: Only peer-reviewed literature that included clinical trials, cohort studies, and randomized controlled trials were taken into consideration. Included were meta-analyses, reviews, and observational studies containing a significant amount of data.

5. Publication Date: To guarantee the accuracy and timeliness of the data, studies that were published within the last ten years were given preference.

### Source of evidence screening and selection

**Database Search:** To find pertinent papers, the review team searched through a number of academic databases, including PubMed, Medline, ResearchGate, and Google Scholar. The search was conducted using keywords associated with high-intensity interval training (HIIT), lifestyle disorders (including obesity, diabetes, and hypertension), and particular physiological outcomes.

**First Screening:** The identified articles' titles and abstracts were first examined for relevancy. At this point, articles that did not concentrate on the designated population, intervention, or results were disqualified.

**Full-Text Review:** Following the first screening, full-text versions of the articles were acquired and carefully examined to determine their eligibility in accordance with the predetermined standards.

**Quality Assessment:** The methodological quality of each chosen study was evaluated.

**Data management** The following procedures were included in data management for this study:

1. **Data Extraction:** A standardized data extraction form was used to extract important information from the chosen research. This contained information about the study's participant population, the kind and length of the intervention, the outcomes that were assessed, and the findings about lifestyle diseases and high-intensity interval training (HIIT).

2. **Data Storage:** The retrieved information was arranged and kept safe in a password-protected database. During the analytical stage, this made access and retrieval simple.

3. **Data Categorization:** The retrieved data were divided into groups according to the kind of lifestyle disease (such as diabetes, obesity, or hypertension) and certain outcomes (such as blood pressure, VO2 max, or glycemic control). This

classification made it easier to compare studies in an organized manner.

4. **Data Cleaning:** The accuracy and consistency of the data were examined.

### Reporting results / Analysis of the evidence

Almost all lifestyle-related disorders have moderate to large effects on a wide range of physiological indicators, such as blood pressure, VO2 max, and levels of TSH, T4, and T3, as well as fasting glucose, Hb1Ac, and HOMA-IR. After intervention with HIIT, other indicators such as BMI, BFR, body weight, waist-hip ratio, and serum levels of LDL-C, TC, and TG are reduced. People in these intervention groups should do high-intensity interval training for about eight to twelve weeks to get the health benefits listed above. Most of these studies were done on groups of people with different types of lifestyle diseases and different sets of demographic characteristics. Some of them are related to old age, while others are related to adulthood. Adults, in general, need more specific interventions when it comes to disease transmission protocols, but it is clear that high-intensity interval training is good for lifestyle diseases.

**Presentation of the results** Key findings from each study were arranged in summary tables that displayed the results. The study features, participant demographics, HIIT protocols, and primary outcomes—such as alterations in blood pressure, VO2 max, glycemic control, and lipid profiles—were all detailed in these tables.

The amount of changes in the health markers was indicated in each table, which facilitated the comparison of HIIT's impact on various lifestyle disorders.

**Language restriction** Only articles published in the English language were included. This restriction was implemented to ensure the inclusion of studies that are widely accessible and to maintain consistency in data.

**Country(ies) involved** India.

**Keywords** High Intensity interval training, Lifestyle diseases, Non communicable diseases, Thyroid disorder, Cardiometabolic Health.

**Dissemination plans** Article publication, seminar conduction, Community services.

### Contributions of each author

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