



# Physical Activity and Cardiorespiratory Fitness among Adolescents with Type 2 Diabetes

## a systematic review and meta-analysis

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### INTRODUCTION

Type 2 diabetes in youth is rising. Many youths living with type 2 diabetes have more than one cardiovascular disease risk factor. Cardiorespiratory fitness and physical activity are both important indicators of these risks later in life.

### AIM

We evaluated the difference in physical activity and cardiorespiratory fitness levels between children and adolescents living with type 2 diabetes (T2D) and controls without diabetes.

### METHOD

MEDLINE, Embase, the Cochrane Library, and CINAHL were searched from 2000 to April 2022.

Inclusion Criteria:

- Observational studies
- reported physical activity and/or fitness
- included adolescents with type 2 diabetes
- Included controls without diabetes

The main outcomes of interest were objective or subjective measures of PA and direct or indirect measures of cardiorespiratory fitness.

Co-variables extracted included body mass index, sex, measures of socio-economic status, age and ethnicity.

A modified risk of bias tool was used to assess the methodological quality of each study.

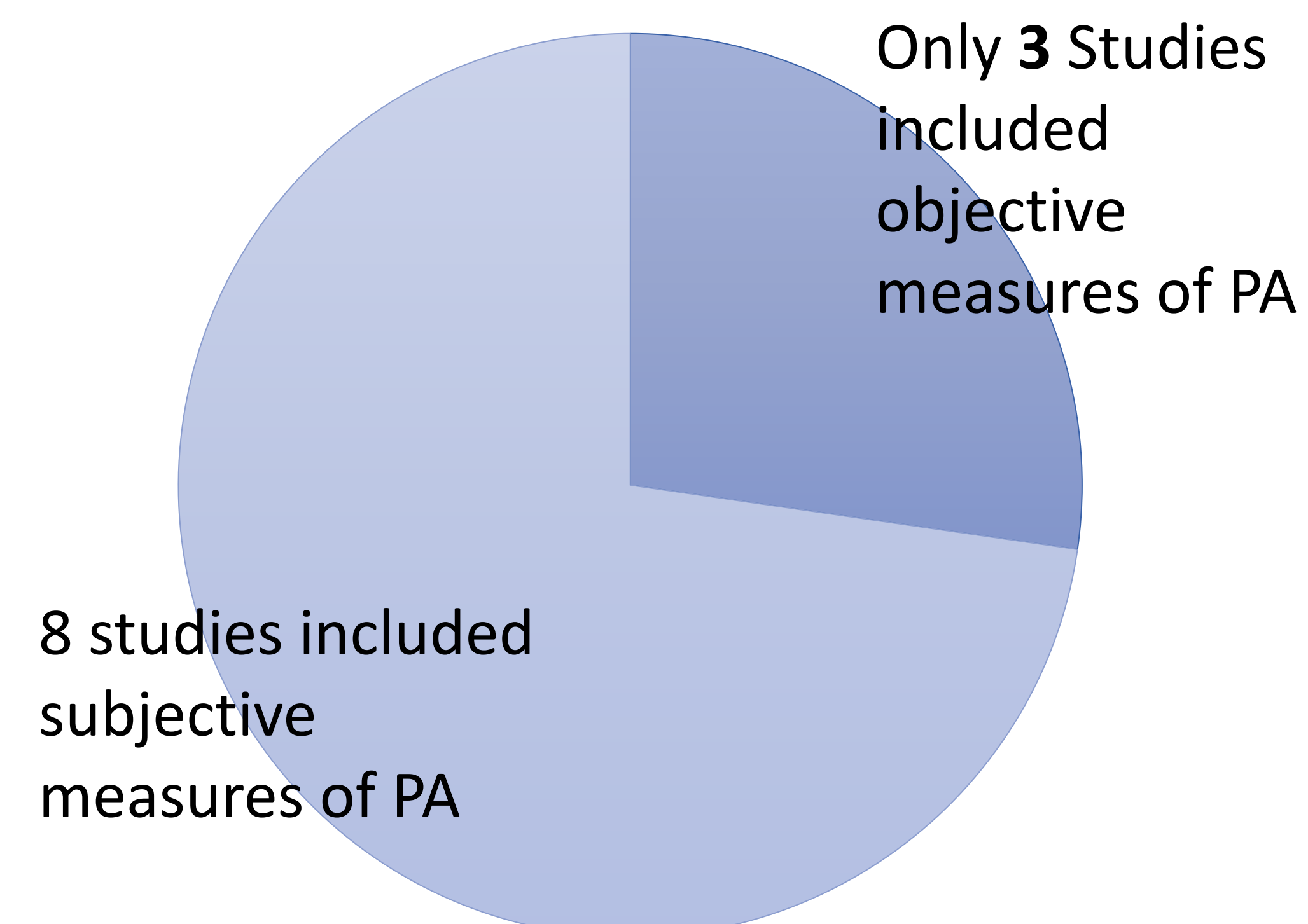
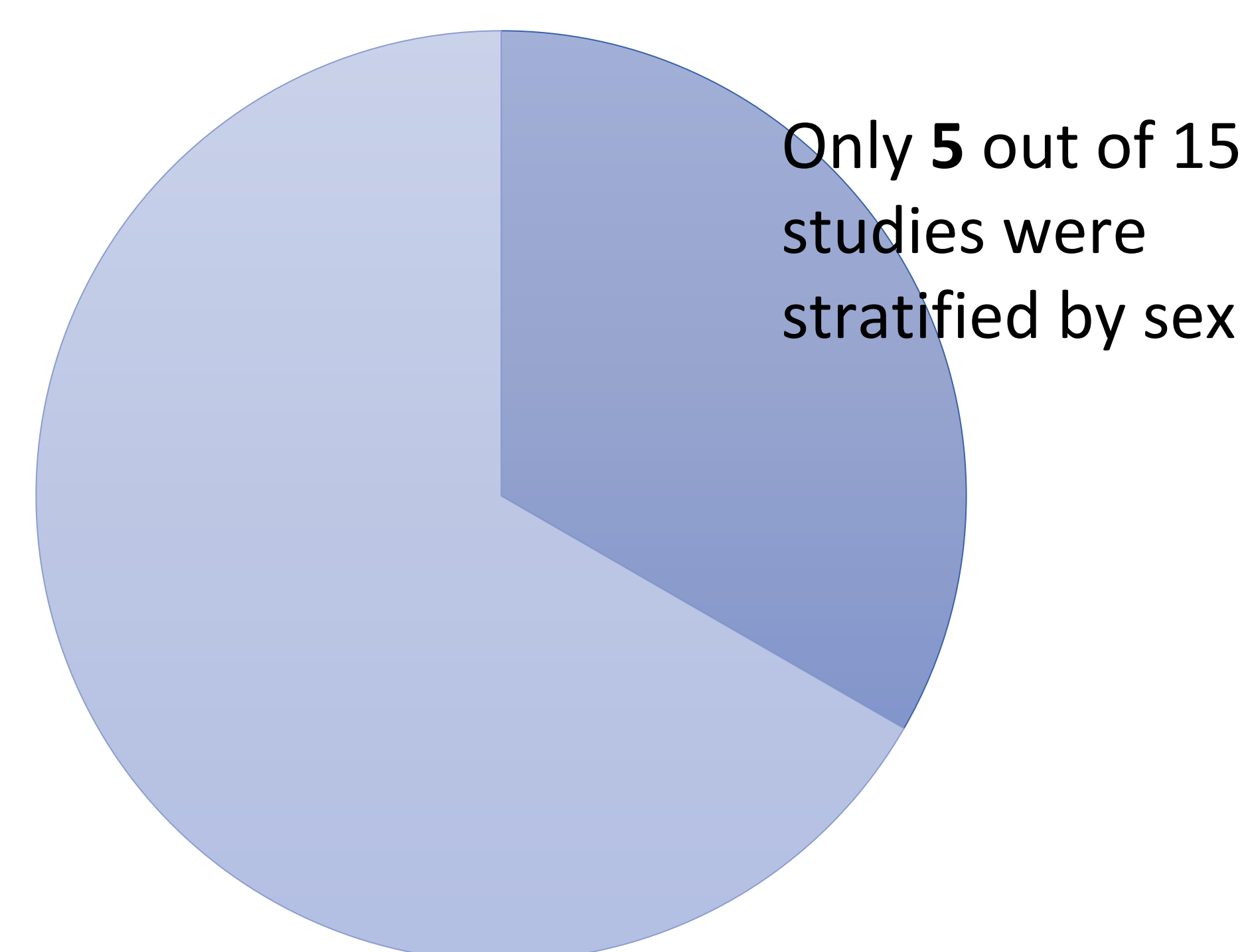
The protocol was registered in Prospero in April 2022 (CRD42022329303).

### RESULTS

- 15 observational studies were included out of 7857 retrieved
- Median sample size of the studies as 111 (range = 19-699)
- 3 studies included objective physical activity measures
- 8 studies included subjective physical activity measures
- 10 studies included direct measures of cardiorespiratory fitness
- 1 study included an indirect measure of cardiorespiratory fitness
- Only 5 studies reported outcomes stratified by sex
- Most studies were considered a high risk of bias

### CONCLUSION

Few adequately powered studies have used objective or direct measures to test for differences between adolescents with T2D and controls without diabetes. Reporting of methods used to quantify PA and fitness is generally poor, leading to uncertainty about study quality.



### ACKNOWLEDGEMENTS

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