

# Association of Youth Distance Running and Lower Extremity Injury: A Systematic Review

Tatiana Paz SPT, Rachel Meyers SPT, Cayla Faverio SPT, Yuxuan Wang SPT, Emily Vosburg SPT, Derek Clewley PT, DPT, PhD

## BACKGROUND

- Distance running has become **increasingly popular** among youth athletes over the past decade.
- Distance running-related injuries have been well researched in the adult and high school (HS) populations, yet **little is known** on the effects of distance running for those under 15.
- Controversy** exists whether distance running is safe for youth runners.
- There are several guidelines available to the public.



## RESULTS

- 258 full texts were screened with **nine articles** retained for data extraction, seven were case reports or case series
- Reid et al. found cross country accounted for **less than 10% of injuries** in youth under 15 years of age compared to various other track activities and events.
- Goldman et al. found **no correlation** between running mileage or gender and sustaining an injury.
- Middle school runners reported **fewer injuries** than high school runners.

## PURPOSE

To examine the association of **youth distance running** and **lower extremity musculoskeletal injury**.



## METHODS

### Databases Reviewed

- Registered with PROSPERO and followed PRISMA guidelines
- Data Sources: MEDLINE, EMBASE and Scopus

### Inclusion Criteria

- Participants under 15 years of age
- Distance reported was at least 800 m
- Athlete sustained an injury to the lower extremity from running

### Operational Definitions

- Distance Running: cross country or a minimum of 800 m if specified
- Youth Running: population under 15 years of age

## RESULTS – COHORT STUDIES

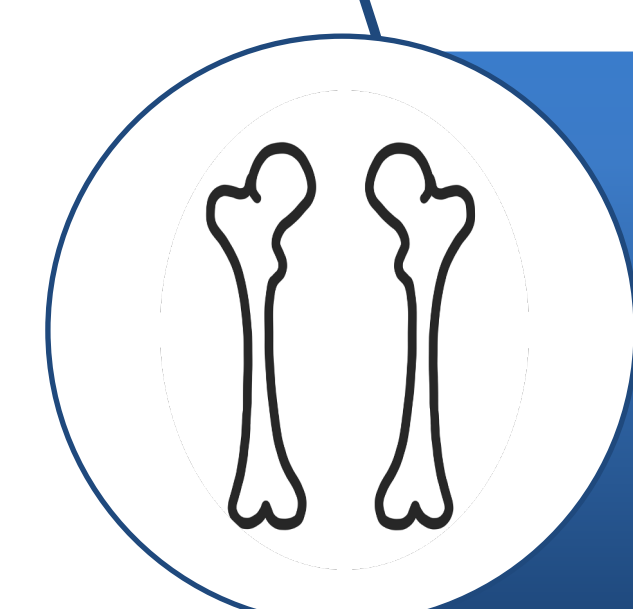
| Study               | Participants                               | Exposure                          | Outcome                                                                                                                        |
|---------------------|--------------------------------------------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Goldman et al. 2019 | 720 middle school (MS) SRLA participants   | 28-week marathon training program | 102 reported MS injuries<br>20.8% of HS runners reported injuries vs. 14.2% of MS runners<br>Most common injury: knee (33%)    |
| Reid et al. 2012    | Age 10-12: ~ 25,243<br>Age 13-14: ~ 53,504 | Cross country events              | 10-12 yo: ~ 1,234 (4.9%) injuries<br>13-14 yo: ~ 4,964 (9.3%) injuries<br>Most frequent injury region: lower extremity (58.2%) |

## RESULTS – CASE REPORTS & CASE SERIES



### Hip Injuries

- Bilateral Avulsion Fx of Pelvis Apophyses; 14 yo F; 20-30 mi weekly
- Fx Separation of Anterior Iliac Apophysis; 14 yo M; cross country



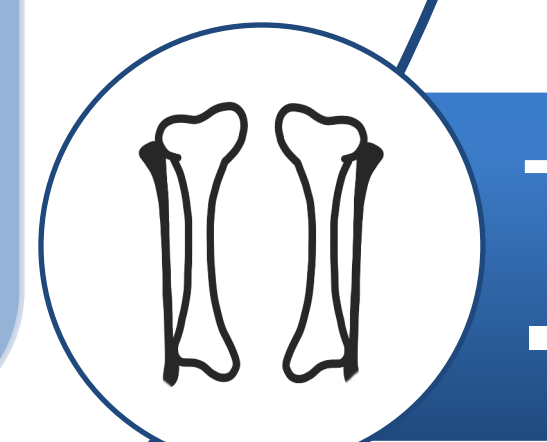
### Femoral Injuries

- Adductor Insertion Avulsion Syndrome: 14 yo M; 10 km daily
- Bilateral Supracondylar Stress Fx: 14 yo M; cross country
- Pathological Fx: 12 yo M; more than 5 km per day



### Knee Injuries

- Dorsal Defect of Patella: 13 yo F; running, 10 km race



### Tibial Injuries

- Tibial Stress Fx: 11 yo M; 2-3 mi per day

## CONCLUSIONS



- The main finding was a **paucity of research**
- Emerging evidence suggests **low risk of injury** associated with youth distance running.
- This review helps establish the need for **additional research** on the effects of distance running in youth under the age of 15.

## CLINICAL RELEVANCE

- There is **not sufficient evidence** to support that youth distance running should be discouraged.
- Available literature suggests youth may be able to participate in distance running with **minimal adverse effects**. One exception may be potential vulnerability to **growth plate injury**.

## ACKNOWLEDGEMENTS / REFERENCES

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- Scan QR Code for a list of references
- Contact: [tatiana.paz@duke.edu](mailto:tatiana.paz@duke.edu)

