

Joint Hypermobility as a Risk Factor for Injury in Adolescent Long-Distance Runners



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Background

Joint hypermobility is defined as an increased range of motion in a joint for an individual's age and gender. An individual's degree of joint mobility can be measured using the Beighton score. For the purposes of this study, generalized joint hypermobility (GJH) is defined as a Beighton score greater than 4. Prior research shows GJH is associated with knee and ankle injuries, though little research examines GJH as a risk factor for running-related injuries particularly in a pediatric population.

Thousands of middle and high school students have trained for the LA Marathon over the past thirty years through Students Run Los Angeles (SRLA). SRLA and the Orthopedic Institute for Children (OIC) have partnered together to ensure a safe training program. As part of this partnership, data on demographics and injuries has been collected in partnership with UCLA over the past four years.

Objectives

1. Determine if GJH is a risk factor for the development of running-related injuries in adolescent long-distance runners.
2. Examine if GJH contributes to the higher injury rate noted in female adolescent runners compared to male runners.



Study Methods

Study population: Current members of the (SRLA) program between the ages of 14 and 18 years old.

Exclusion Criteria: No longer a member of SRLA, not between the ages of 14 and 18 years old.

Data Collection:

Obtained informed consent from the participant and their guardian.

Beighton assessment was conducted via a HIPAA compliant video visit.

Scored 0-9 by two medical providers.

Will assess each participant's injury data from the 2019-20 SRLA season and Beighton score using a Poisson multivariable regression model to assess for correlation between joint hypermobility and running-related injury rate per 1000 miles run.

Results will be analyzed by gender and GJH. A two-sided p-value of 0.05 will be used for this study and its analysis.

Beighton Score Criteria

- 1) Extend your pinkie fingers towards the back of your hand (1 point per side that extends to 90 degrees or further).
- 2) Flex your wrist, trying to touch your wrist with your thumb (1 point per side where the thumb can touch the wrist).
- 3) Extend each elbow (1 point per elbow that hyperextends 10 degrees or more).
- 4) Extend each knee (1 point per knee that hyperextends beyond 10 degrees).
- 5) Bend over straight forward, trying to touch your palms to the floor (1 point if palms touch the floor).

Results

This retrospective cohort study is currently ongoing, with new participants still being enrolled.

Age Range: 14 and 18 years old

Mean age = 15.91 years old

Median age= 16 years old

	Males	Females	Total
Beighton 5+	4	6	10
Beighton < 5	12	10	22
Total	16	16	32

Conclusions

There are no conclusions at this time as participants are still being enrolled into the study and data collection is still ongoing. The null hypothesis is that GJH will not affect risk of running-related injury in adolescent runners. Similar to prior research, we expect female participants will have a higher prevalence of generalized joint hypermobility than male participants. The injury data that was previously collected showed a higher injury rate in female adolescent runners than in male runners, and we anticipate that GJH may partially explain this difference.

References

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