



A Factual Survey on the Injury of Youth Athletes for Prevention and Management

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Dear Editor-in-Chief

Short-distance sprinting is a sport that requires full body movement of the legs, abdomen, back, shoulders, and arms with explosive power in a short time. The basic principles of sprinting are relatively simple and governed by the laws of motion, but the way athletes solve mechanical constraints and utilize degrees of freedom within those constraints is much more complex (1).

Sprinters with these multi-movements have a significant effect on performance due to injuries. In addition, more than half of injuries (56%) were expected to interfere with participation in the competition or training (2). Runners experience an impact force equivalent to 5 times their weight on their feet which results in excessive injuries, and sprint and jump activities have a higher risk of acute injury due to the supramaximal force combined with the high strain eccentrically loaded on the pre-contracted musculature tissue within the stretch-shortening cycle (3). Muscle strain of the thigh was the injury with the highest prevalence in the Olympian sprint, followed by foot ligament injury and upper ankle ligament injury (4). The most common sites of injury in athletes were 1) leg, 2) thigh, and 3) knee, with the most common diagnoses being stress fractures and hamstring strains (5). Most of the in-

jured sites of elite sprinters are reported as various parts of the lower extremities. However, it is important to know which sites of the lower extremity injuries are most common in order to prevent and manage athletes' injuries. The failure to prevent or manage athletes' injuries in the early stages will lead to chronic conversion and adversely affect performance.

Although the specific mechanisms of injury are heterogeneous, the physis, as the weakest part of the bone and tissue, is a site that is prone to injury in youth athletes (6). These chronic injuries could persist in adulthood, especially as the effects of childhood sports injuries (7). The successful implementation of an injury prevention strategy relies on accurate characterization of injury risk factors, and an accurate assessment of the consequences and short distance sprinter injuries is an important aspect in identifying the extent of the injury problem (8). Failure to prevent chronic injuries in youth athletes can cause a huge disruption to their development and lead to reduced performance due to persistent problems as adult athletes. Therefore, it is essential to investigate the injuries of youth athletes for the prevention and management of injuries.



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In the previous studies, the survey of the injuries of youth short-distance sprinter athletes is very insufficient. Since the risk of chronic injuries come from youths (adolescent), it is important to prevention and management before adulthood (9). However, in PubMed, used by researchers around the world, a search for 'youth (adolescent) sprinter injuries' and 'children sprinter injuries' resulted in 28 and 5 articles, respectively. In addition, since only injury to a specific site (Hamstring strain) is concentrated. It is necessary to examine in more detail the injuries and diagnoses of youth short-distance sprinters.

Therefore, a factual survey of the injuries and diagnoses of youth short-distance sprinters is needed through further experimental and research. The factual survey will help prevent and manage youth short-distance sprinters not only to improve their performance, but also to prevent chronic injuries.

Conflict of interest

The authors declare that there is no conflict of interest.

References

1. Haugen T, McGhie D, Ettema G (2019). Sprint running: from fundamental mechanics to practice-a review. *Eur J Appl Physiol*, 119(6):1273-87.
2. Alonso JM, Junge A, Renström P, et al (2009). Engebretsen L, Mountjoy M, Dvorak J. Sports injuries surveillance during the 2007 IAAF World Athletics Championships. *Clin J Sport Med*, 19(1):26-32.
3. Jacobsson J, Timpka T, Kowalski J, et al (2012). Prevalence of musculoskeletal injuries in Swedish elite track and field athletes. *Am J Sports Med*, 40(1):163-9.
4. Lambert C, Reinert N, Stahl L, et al (2020). Epidemiology of injuries in track and field athletes: a cross-sectional study of specific injuries based on time loss and reduction in sporting level. *Phys Sportsmed*, 1-10.
5. Bennell KL, Crossley K (1996). Musculoskeletal injuries in track and field: incidence, distribution and risk factors. *Aust J Sci Med Sport*, 28(3):69-75.
6. Arnold A, Thigpen CA, Beattie PF, et al (2017). Overuse Physical Injuries in Youth Athletes. *Sports Health*, 9(2):139-147.
7. Adirim TA, Cheng TL (2003). Overview of injuries in the young athlete. *Sports Med*, 33(1):75-81.
8. Palmer-Green D, Fuller C, Jaques R, Hunter G (2013). The Injury/Illness Performance Project (IIPP): A Novel Epidemiological Approach for Recording the Consequences of Sports Injuries and Illnesses. *J Sports Med*, 2013:523974.
9. Mikkelsen LO, Nupponen H, Kaprio J, Kautiainen H, Mikkelsen M, Kujala UM (2006). Adolescent flexibility, endurance strength, and physical activity as predictors of adult tension neck, low back pain, and knee injury: a 25 year follow up study. *Br J Sports Med*, 40(2):107-13.