The results of orthopaedic medical examinations in adolescent amateur weightlifters

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Abstract
Few studies have been conducted on adolescent weightlifters’ injuries and physical characteristics. The goal of this study was to report the results of orthopaedic medical examinations performed on adolescent amateur weightlifters from 2012 to 2019. Physical examinations, generalised joint laxity, muscle and joint tightness, static alignment, lower extremity muscle volume, and medial longitudinal arch of the foot were all part of the orthopaedic medical examination (the height from the tip of the navicular tubercle to the ground surface).

Keywords: Adolescent weightlifters, orthopaedic medical examination, early sports specialization, gender difference
INTRODUCTION

Resistance training, such as weightlifting, has grown in popularity among athletes because several studies have shown that including resistance training improves performance in sports. Weightlifting, on the other hand, is linked to an increased risk of Low Back Pain (LBP), shoulder and knee injuries. It is still debatable whether children and adolescent athletes should engage in weightlifting as part of their training. Adolescent athletes are particularly vulnerable to sports-related injuries due to growth spurts and increased participation in sports activities. McCambridge and colleagues report several studies on injuries in adult elite weightlifters that have been published. A recent systematic review found that the injury rate among Olympic level weightlifters was 2.4-3.3 injuries/1000 h of training. However, studies on the prevalence of injuries and physical characteristics in young amateur weightlifters are scarce. Only one study has evaluated imaging findings in adolescent weightlifters, to the best of our knowledge. Bush et al. discovered that serious injuries were more common in elite weightlifters who specialized at a younger age (16 years old). Furthermore, there are significant differences in sports-related injuries between male and female athletes during puberty. Stracciolini et al. found that young female athletes were more likely to sustain overuse injuries, whereas young male athletes were more likely to sustain traumatic injuries. Many factors have been identified as contributing to male-female differences in the types of sports-related injuries, including biomechanical, flexibility-related, and anatomical and hormonal differences. However, no research has been conducted to examine gender differences in adolescent amateur weightlifters. Yokoe et al. reported the importance of orthopaedic medical examination (orthopaedic screening) for young amateur athletes as a screening tool for injury prevention and an opportunity to educate athletes and their staff [1,2].

MATERIALS AND METHODS

Our hospital's institutional review board approved this study (Accession No 2015-101). The study was conducted ethically in accordance with international standards. A patient and his or her parent or legal guardian provided written informed consent. From 2012 to 2019, the records of orthopaedic medical examinations for young amateur athletes were reviewed retrospectively, and the results of adolescent weightlifters were identified. Annual orthopaedic medical examinations for young athletes were conducted at a single institution in the study area. The examinations' specifics have been described elsewhere. All of the young amateur athletes who underwent orthopaedic medical examinations were junior high or high school students from the study area who had been chosen to compete in the annual national championship tournament (The Japanese National Sports Festival). This sports festival was founded in 1946 and has been held every year since, every year after that. Weightlifters were among the young athletes included in this study. Weightlifters who had been competing in weightlifting for less than a year were left out of the study. This study's participants were all early weightlifting specialists. It is debatable whether early specialization is required for weightlifters [7].

However, due to its retrospective design and small population size, the current study was unable to draw conclusions about gender differences in weightlifters. More research is needed to investigate gender differences in young and adult weightlifters in order to personalize weightlifting prevention and treatment strategies. It is debatable whether early specialization is required for weightlifters [7].

This study’s participants were all early weightlifting specialists. Some sports, such as gymnastics and figure skating, may require early sports specialization because peak performance occurs before physical maturation. Early sports specialization, on the other hand, has been linked to an increased risk of overuse injuries, burnout, and depression. According to Bush et al. 68.8% of adult elite weightlifters do not believe that early specialization is required to achieve elite status. Furthermore, the American Academy of Pediatrics advised...
preadolescents and adolescents to avoid heavy lifting until they reached physical and skeletal maturity. More research is needed to determine the impact of early specialization on physical and psychological problems in adolescent weightlifters. The current study has several limitations. First, the upper extremities were not evaluated during the orthopaedic medical examinations in this study. Shoulder injuries are common in weightlifters, so more research is needed to assess the injuries and physical characteristics of the upper extremities in adolescent weightlifters. Second, the study included a small number of adolescent female athletes. However, because few female weightlifters specialize in competitive weightlifting at a young age, this could not have been avoided. Third, the orthopaedic medical examinations were carried out in a cross-sectional manner (annually). As a result, the impact of early specialization on weightlifters’ careers was not assessed. Despite these limitations, the current study provided clinicians and researchers with useful information about young amateur weightlifters, as well as weightlifters and their healthcare providers [8-10].

CONCLUSION
A total of 9.1% of adolescent amateur weightlifters had received orthopaedic treatments, with spine-related injuries being the most prevalent of the adolescent weightlifters who did not receive orthopaedic treatments, a third reported pain in the spine or lower extremities lasting for >4 weeks, accompanied by positive findings on physical examinations. There were no significant gender differences in the incidence of pain or findings of physical examinations, although female weightlifters had more reduced dorsiflexion of the ankle joints.

References: