How young athletes can prevent injuries, and treat them when they happen

An interview with Dr. Eiji Tanikawa, founder of Tanikawa Sports Medicine and Research, conducted by Sophie Sprung, June 12, 2022

Sophie Sprung (SS): Dr. Tanikawa, you are an expert in sports injury and conditioning. Tell us about your background and how you came to work in this field.

Dr. Tanikawa (DT): Now that I look back on it, I actually did not start out having any particular sensitivity for this field. Our family, going back to my earliest childhood memories, was not well-off. I envied my friends, who all had nice toys and electronic stereos and so on. So I would get broken ones, and learned to fix them using my own intuition and inventiveness - and eventually I became very skillful with my hands. As a child, I would injure myself and applied the same principle - if I hurt my skin, I would apply the thin membrane from the inside of an eggshell onto the cut skin. It was an idea I came up with on my own. Much later on, as I approached 30 years old and had worked as an employee, I again made the connection, realizing that I really liked the combination of sports and fixing things.

I went to a school for judo therapists. These are certified by the Japanese Ministry of Health and treat sprains, fractures, dislocations, and similar conditions that are common in sports. They use a traditional Japanese technique that differs from that of medical professionals (it's called hone-tsugi, and has been in use since the Edo period). I graduated, and received my national certification. After working in three hospitals, I went to the US to learn the latest treatment techniques. (I came to the US on my own initiative, because I had become fascinated with the skills of the doctor who had previously treated an injury.)

SS: How many athletes does your clinic see each year? What percentage of them are under 18 years old?

DT: Some 7,500 patients visit the clinic annually. At this point, admittance is limited to one per day and is by appointment only. Of these, 70 to 80 percent are under 18 years old. The most common injury is ankle sprain. The second is osteoporosis, a growth disorder at the bone extremities that is common in younger years.

SS: What sports do young athletes visiting your clinic practice?

DT: No. 1 Soccer (number practicing this sport in Japan: 7 million) No. 2 Baseball (7 million) No. 3 Basketball (4 million) No. 4 Ballet (400,000) Figure skating is probably seventh (there are some 4,000 competitive skaters).

SS: How many figure skaters have you treated so far? What is their average age?

DT: About 400 figure skaters (10 percent of Japan's competitive population), most of them in the range of 12-14 years old, which is their greatest period of physical growth.





Figure-skating injuries, their prevention and treatment

SS: What are the most common injuries you've observed in figure skaters? Are there any differences in the types and frequency of injuries compared to other athletes?

DT: By far the biggest difference from other types of athletes is issues with footwear (skating boots). For example, in baseball or soccer, if you sprain your foot and it heals, you can run even if with a little swelling. But in skating, the shoe presents essentially a wall of pressure on the foot. Even if there is only a few millimeters of swelling left after treatment, this can cause severe pain when landing a jump on the ice, so we treat swelling of even a few millimeters. Other injuries we see include fatigue fractures of the bones of the instep, tibia, etc.. Shoes often cause external tibial disorders and lumbar spondylolysis.

SS: When I came to your clinic, I had (and still have) some bumps next to my malleolus. I remember being told that the bumps were bony protrusions that rubbed against the inside of my skates. This didn't necessarily mean that the shoes were the main or only cause of the injury, but what do you think is important for skaters to know in terms of shoe selection?

DT: Most athletes buy a new pair of shoes once a year, so this is an important decision. The shoes shouldn't fit too tightly; they should be about 0.5 cm larger than the foot, and include cushioning material, especially during the growth period, when the bones are not yet fully developed. I wonder why footwear manufacturers offer so few custom parts, because there are so many problems of shoes being too tight. I'm not a shoe expert, but I feel the skater should choose a structure that allows the toes to work together harmoniously.

SS: Regarding athletes under 18, many cases are due to the growth period, including Osgood-Schlatter disease. Are there many such cases among the young athletes who come to your clinic? Also, in France, when a patient experiences knee pain that is suspected to be Osgood-Schlatter, they are often advised to rest and stretch (pull on the back of the leg to stretch the quadriceps tendon, for example). What would you recommend when a skater experiences knee pain?

DT: We encounter a number of common conditions, including Osgood-Schlatter Disease, shin splints, and outer tibial pain. Stretching and rest are critical. With Osgood, the body favors the muscles in front of the thigh, which causes imbalance and exerts continuous pressure below the knee. We need to train the muscles on the reverse side, which are called the antagonist pairs.



SS: Recent research has focused on injury prevention, such as prehabilitation. As you know, training for figure skating involves a lot of repetitive practice of the same movements, such as jumping. What should we skaters keep in mind to reduce repetitive strain? What is the best type of conditioning, including warm-up or cool-down?

DT: I believe that the most effective prevention is to focus on improving the responsiveness of the receptors in the joints, which play a key role in injury prevention. The response of these receptors, for example, causes your muscle to move so that you land on your foot. According to one theory, the receptors react within an average of 0.04 seconds during landing; the muscles act as springs, contracting to support the body. If the receptors in your joint slow down, the muscles respond more slowly and lose strength, causing the body to lose balance. Or vibration from the ice or ground can be repeatedly transmitted directly to the joints and bones, which can accumulate inflammation and fatigue, and in turn lead to injury. The key way to prevent injuries is to do dynamic stretching just before exercise to increase receptor responsiveness.

Dynamic stretching is a strategy used to improve mobility while proceeding through a range of motion, often in a manner that looks like the activity or sport that is going to be performed. Static stretching is holding a stretch without movement, usually only at the end-range of a muscle.

(cf. https://www.risephysicaltherapy.com/blog/static-vs-dynamic-stretching)

SS: Dynamic stretching increases performance of the receptors - could you give more specific suggestions on how to achieve this?

DT: If you're a figure skater, you probably practice jumps off-ice at warm-up. Try to close your eyes when you practice jumps or rotations off-ice. That will help stimulate your neuroreceptors, helping improve your body's reaction for better performance. SS: In recent years, attention has been paid not only to athletes' bodies, but also to their mental health. In fact, I believe that many athletes have a hard time mentally when they are unable to train as much as they would like due to injuries. What do you keep in mind when dealing with such athletes?

DT: Most injuries occur just before a game or competition, because you are concentrating so much on your training - it's almost as if you're blind to the situation. So, for injured players, I ask them to step back, take a deep breath, and carefully look at themselves and their surroundings. It will help them find out what they are lacking, so they can then concentrate on those areas. To recharge energy, give courage and confidence that the treatment will restore the athlete to a state even stronger than they were before, so they can look forward to even better performance once the injury is healed.

SS: Finally, I have a personal question. We heard that you used to be an athlete. If your younger self came into your clinic today for your advice, what would you say?

DT: I'd say: 'Thanks for coming a long way. You can make a comeback now!'

Thank you so much for conducting this interview. We touched briefly on the electrical current that we all have in our bodies, and how it can be used to repair injuries. Next time we chat, we should cover that critical subject!

