

## Department of Orthopaedic Surgery

### Division of Sports Medicine

---

Keishi Marumo, *Professor*

Hiroki Funasaki, *Assistant Professor*

#### General Summary

##### *Clinical Research*

The ongoing research in our department concentrates on competitive athletes (including professionals), amateurs who include sports activities in their daily lives, and young athletes engaged in school sports clubs or dedicated to training within sports clubs. In 2009 we focused on the issues related to the sports injuries of young athletes.

#### Research Activities

##### *Three-dimensional motion analysis of the pelvis during soccer kicks*

We performed a 3-dimensional motion analysis (200 Hz) of the pelvis during soccer kicks using a Vicon motion capture system (Vicon, Centennial, CO, USA) to evaluate the mechanical stresses around the pelvis. In less than 1 second after the ball impact until extension of the knee, the pelvis provided a “reverse motion,” that is, a rotation towards the anterior tilt in the sagittal plane and a posterior rotation in the axial plane. We concluded that the pelvis plays an important role as the center of the kinematic chain during soccer kicks and acts as a source of additional power providing enough rotation in the sagittal and axial planes. We suspect that the “reverse motion” in the sagittal plane contributes to injuries affecting the hip flexors.

##### *Issues related to sports injuries during growth periods in children and teens*

We reviewed major orthopedic sports injuries that occur during various growth periods in school children and teenagers and propose a multifactorial problem-solving approach for their treatment. For the majority of sports injuries, early detection can lead to complete recovery without complications and to an early return to the original activity. Musculoskeletal function in children and teens has recently gained increased attention, and a nationwide school screening survey has been attempted. With more children and teens involved in sports activities, efforts must be made to provide the best long-term support, with good communication among physicians, coaches, and parents.

#### Publications

**Funasaki H, Kan I, Morohashi M, Kato S, Iwama T, Yui N, Marumo K.** A case of osteochondral injury of the glenoid rim in a boxing player (in Japanese). *Nippon Seikeigeka sports Igakkai Zasshi* 2009; **29**: 64–8.

**Funasaki H, Yoshida M, Kan I, Kato S, Kasama K, Ishizuka R, Marumo K.** The effectiveness of

conservative treatment in non-operative patients with a full-thickness tear of rotator cuff (in Japanese). *Katakansetsu* 2009; **33**: 697–700.

**Kan I, Funasaki H, Yoshida M, Kato S, Kasama K, Marumo K.** Morphological and immunohistological study of the acromion in patients with rotator cuff tear (in Japanese). *Kanto Seikei*

*Saigai Geka Gakkai Zasshi* 2010; **41**: 11-7.  
**Books Funasaki H.** Sports injuries (in Japanese). In: Abo M, Hashimoto K, editors.

Common and uncommon sense in rehabilitation.  
Tokyo: Miwashoten; 2009. p. 55-8.