

Department of Orthopaedic Surgery

Division of Sports Medicine

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General Summary

Clinical Research

The ongoing research in our department concentrates on competitive athletes (including professional athletes), amateur athletes who include sports activities in their daily activities and young athletes engaged in school sports clubs or dedicated to training within sports clubs. In 2016 we focused mostly on basic research.

Research Activities

Sports activities of middle and older sports enthusiasts who underwent successful conservative treatment for full thickness tear of the rotator cuff

We evaluated sports activities in 54 sports enthusiasts who were older than 40 years and had been conservatively and successfully treated for full thickness tears of the rotator cuff. Their average Japanese Orthopedic Association score (JOA score) was 67 points at initial visits and at the final follow-up it was 89 points; their pain score significantly improved. All patients returned to their previous sport activities. Fifty of 54 patients answered that their treatment was 'more than 80% satisfactory' in regard to their current sports activities. However, post-treatment sport ability depended on tear size, muscle strength, and type of sport activity. In regard to sport disciplines involving the shoulder joint, patients with massive tears and those practicing overhead throws scored worse than other in this group.

Obturator muscle strain in soccer players

We analyzed 9 obturator muscle strain cases in 8 soccer players and examined whether prognosis is related to any specific physical findings, mechanism of injury and/or period from injury to return to play. There were 3 university students and 5 professional players with an average age of 21 years. Strains developed in 7 hips with an obvious mechanism of injury, in 3 hips on the kicking side and in 4 hips on the sustained side. In all players, pain was induced by passive motion of hip abduction and internal rotation. It is important to understand characteristics of physical findings and mechanism of injury for the accurate diagnosis and following prediction of prognosis in obturator muscle strain patients.

Changes in nerve-muscle coordination caused by brain fatigue: An analysis using silent period of quadriceps and hamstrings

We investigated changes of silent period of quadriceps and hamstrings before and after inducing brain fatigue in 11 healthy adults. Fatigue of brain was induced with the Uchida-Kraepelin psycho-diagnostic test. Pre-motion time (PMT) did not show any significant

differences between pre- and post-tolerance test. In contrast, switched silent period (SSP) under brain fatigue condition was significantly prolonged in dominant leg immediately after the tolerance test. Our results suggest that decrease in neuromuscular coordination was induced by brain fatigue.

Changes of gluteus medius muscle activity induced by different joint positions

We measured muscle activities of hip joint muscles during hip abduction using rectified filtered electromyography and investigated changes of these activities in different joint positions in 14 healthy adults. Percent maximal voluntary contraction (%MVC) of the gluteus medius muscle was obtained by hip abduction with maximal external rotation notwithstanding angle differences of the knee joint. On the other hand, activity of the tensor fasciae latae was lowest in hip abduction with the knee 90 degrees in flexion and with the hip maximal rotation. There was no significant difference in %MVC of the gluteus maximum muscle in different positions of the hip and/or the knee. The results indicated that position for most effective training of the gluteus medius muscle is hip abduction with the hip in maximal external rotation and the knee in 90 degree flexion.

A case of bipartite navicular bone developed in a young soccer player

We reported a rare case of 16-year-old male soccer player who had a bipartite navicular. Care should be taken while making the diagnosis of this disease because it is often detected after trauma and misdiagnosed as an acute fracture and/or fatigue fracture. Although the patient continues with no symptoms to play as a professional soccer player, a long-term careful observation is necessary.

A case of knee osteochondromatosis developed in a nine-year-old girl

We reported a rare case of stage II osteochondromatosis of the knee developed in a 9-year-old girl. She received an arthroscopic resection of pathological synovia and loose bodies. No recurrence was observed at a recent follow-up at one year and 6 months after the operation. There have been only 6 cases reported in the literature where this disease was found in less than 10-year-old patients. In young patients, it is important to discriminate stage I osteochondromatosis for juvenile idiopathic arthritis.

A case of Kocher-Lorenz type capitellar fracture in a junior baseball player occurred due to baseball pitching

We reported a rare case of Kocher-Lorenz type capitellar fracture occurred during baseball pitching of in a 12-year-old baseball player. Although plain X-rays and computed tomogram showed normal findings, MRI demonstrated a 6mm chondral defect at the center of humeral capitulum. Only 3 cases of patients less than 12 years of age who developed Kocher-Lorenz fracture have been reported in the literature and there has been no reports of this fracture that occurred during baseball pitching.

Supraspinatus and subscapularis muscle strains developed in baseball pitchers

Supraspinatus and subscapularis tendon injury are often seen in baseball pitchers. We reported rare two cases of supraspinatus and subscapularis muscle strain (muscle-tendon

junction) developed in high school baseball pitchers. Muscle strains were classified as Grade I in both cases. Following a conservative treatment including physical rehabilitation, both patients were able to return to their previous sports activities.

Publications

Yoshida M, Funasaki H, Marumo K. Efficacy of autologous leukocyte-reduced platelet-rich plasma therapy for patellar tendinopathy in a rat

treadmill model. *Muscles Ligaments Tendons J.* 2016; **6**: 205-15.