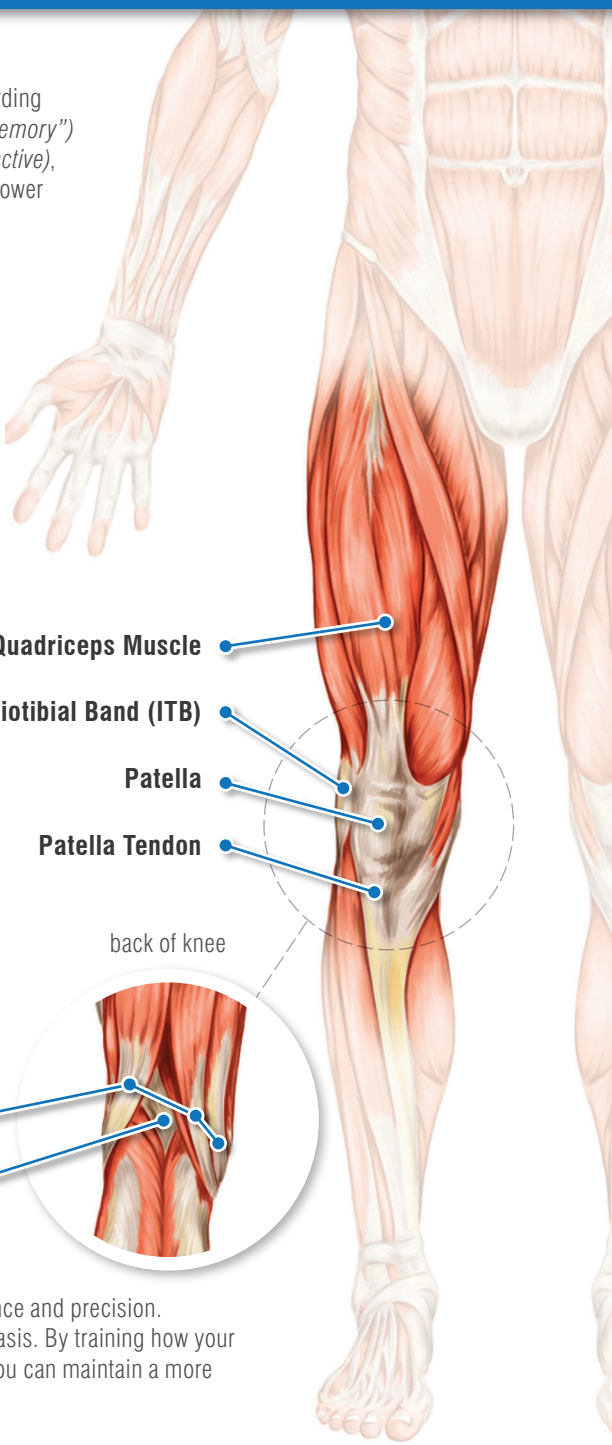
Neuromuscular Control

What is neuromuscular control?

Neuromuscular control is defined as the unconscious trained response of a muscle to a signal regarding dynamic joint stability. This system of neurological messages *(sometimes referred to as "muscle memory")* is a complex interacting system connecting different aspects of muscle actions *(static, dynamic, reactive)*, muscle contractions, coordination, stabilization, body posture and balance. The movements of the lower extremity, including the knee joint, are controlled through this system, which needs to provide the correct messaging for purposeful movement.

Knee Bends

Side Jumps



How does neuromuscular control work in sports?

Movement is essential to perform any daily activity. In sports, movement requires strength, endurance and precision. Training the neurological system requires the movement to be performed correctly on a repetitive basis. By training how your lower extremity moves, through controlled exercises that focus on jumping, landing and pivoting, you can maintain a more stable position of the lower extremity including the knee joint.

Why is neuromuscular dynamics important in injury prevention?

Injuries such as muscle, tendon and ligament strains are caused when the body moves beyond the normal movement limits. In the lower extremity, injury is often as a result of the movement of the knee inwards. Neurodynamic training designed to keep the knee over the toes in all movements, especially when the foot hits the ground such as in running and jumping, will help to prevent injury. This training is also important for athletes returning to sport following an injury and should be included in any rehabilitation program.

References: Astrid, Z., et al. Balance Training for Neuromuscular Control and Performance Enhancement: A Systemic Review. Journal of Athletic Training, 2010; July-Aug 45(4), 392-403
Emery CA, Meeuwisse WH. The Effectiveness of a Neuromuscular Prevention Strategy to Reduce Injuries in Youth Soccer: A Cluster-Randomised Controlled Trial. British Journal of Sports Medicine, 2010, 44(8): 555–62.
Hewet, T.E., Ford, K.R., Meyer, M.D. Anterior Cruciate Ligament Injuries in Female Athletes, Part 2: A Meta-Analysis of Neuromuscular Interventions Aimed at Injury Prevention. American Journal of Sports Medicine, 2006; 34(3), 490-498.

Exercises are from the FIFA 11+ program available at *http://f-marc.com/11plus/exercises/*

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