

Proprioception and Neuromuscular Control in Exercise Rehabilitation for the Lower Limb

Nicholas Clark, BEd, BSc, MSc, MCSP, MMACP, CSCS.

Presenter

Nick holds Bachelor's degrees in Physical Education from the University of Greenwich and Physiotherapy from the University of East London. He also holds a Master's degree in Manipulative Physiotherapy from University College London, and has been a Certified Strength and Conditioning Specialist with the United States National Strength and Conditioning Association for more than six years. He is currently Clinical Director of the London-based Integrated Physiotherapy and Conditioning Limited, a Visiting Lecturer to the MSc School of Human Health and Performance at University College London, and is Co-Founder and Vice-Chair of the Association of Chartered Physiotherapists in Exercise Therapy. In addition to having been a Physiotherapist at Saracens Rugby Union Football Club, Nick has practiced at the Royal Free Hospital, St Thomas' Hospital, and Guy's Hospital. He has performed service development and clinical work in military and sports injuries with the Parachute Regiment at the Ministry of Defence Colchester Garrison Regional Rehabilitation Unit, and has provided consultation services with regard to the selection and clinical implementation of injury-specific functional tests and lower limb outcome measures for enlisted personnel from the Army, Royal Navy, and Royal Air Force. Nick has been a Visiting Lecturer to the London Sport Institute at Middlesex University and the American College of Sports Medicine, and he has served as a Manuscript Reviewer for the Journal of Orthopaedic and Sports Physical Therapy. He has also directed pioneering experimental research at the University College London Institute of Human Performance at the Royal National Orthopaedic Hospital – this research studied the role of feedback motor control in functional stability of the knee and was awarded the Manipulation Association of Chartered Physiotherapists 2005 Research Presentation Award. Nick was also involved for three years in a randomized controlled trial at the Human Motion and Performance Laboratory of the University of East London which studied the effects of open versus closed kinetic chain strength training on several aspects of outcome following anterior cruciate ligament reconstruction – this included winning a Nuffield Foundation Research Scholarship to assess twelve-month outcome using a force plate-3D kinematic system and multidirectional hop tests. Nick's special interests are sensorimotor control of functional joint stability, strength training in rehabilitation, and the effects of manual therapy on sensorimotor control. He has published and presented original research and review articles on aspects of open and closed kinetic chain exercise in knee rehabilitation, neuromuscular control of functional knee stability, and functional performance testing of the lower limb, and he has lectured widely throughout the United Kingdom to clinicians from the National Health Service, private practice, professional sport, and the Ministry of Defence.

Course Description

This unique theory and practical course, which was the first of its kind in the United Kingdom, considers the clinical science of proprioception and neuromuscular control with regard to functional joint stability. Emphasis is placed on presenting delegates with the advanced assessment and training techniques which form an evidence-based progression-model for the clinical application of proprioception and neuromuscular control training for exercise rehabilitation following lower limb joint injury. Knee ligament and ankle ligament injury are considered in detail, although the exercise rehabilitation progression-model can be applied after any hip, knee, or ankle injury or surgery, including arthroscopic procedures and total joint arthroplasty. Extensive reference is made to the most up-to-date published and unpublished research from the international scientific community. Past course delegates have included clinicians from the National Health Service, private practice, Premier League Rugby Union, Premier League Football, the British Armed Forces, and the 2003 Rugby World Cup Champions Team England. The course Content and Learning Outcomes correspond to multiple European Standards within the Core Competencies for a Sports Physiotherapist as defined by the *Sports Physiotherapy for All Project*, and the course is a British Association of Sports Rehabilitators and Trainers (BASRaT) Approved Continuing Professional Development Course.

Fee: £225 by cheque or online, payable to 'Health Education Seminars' (includes refreshments, course manual, and CPD certificate of attendance - 15hrs). *VAT INCREASE from January 1st 2010.*

Course outline

Day 1	Day 2
<ul style="list-style-type: none"> • Epidemiology and aetiology of lower limb joint injury • History of exercise therapy for lower limb joint injury • Current concepts in joint stability • Clinical measurement of functional joint stability • Current concepts in: <ul style="list-style-type: none"> ○ joint sensorimotor control ○ proprioception ○ neuromuscular control • Theories and stages of learning in sensorimotor control • Clinical measurement of learning in joint sensorimotor control 	<ul style="list-style-type: none"> • Effect of taping, bracing, and orthotics on proprioception and neuromuscular control • Sex differences in proprioception and neuromuscular control • Peripheral muscle fatigue and sensorimotor control • Screening-criteria and progression-criteria for proprioception and neuromuscular control training • Role and clinical application of: <ul style="list-style-type: none"> ○ open kinetic chain training ○ closed kinetic chain training ○ balance and perturbation training ○ deceleration and plyometric training • Ongoing and future research in exercise rehabilitation for functional joint stability

Nick Clark's recent publications and presentations

Clark N. 2006. Clinical Application of Biomechanical Concepts for the Understanding and Treatment of a Unilateral Medial Tibial Stress Fracture in a British Soldier. Invited Platform Presentation. Staffordshire University Tissue Stress Conference. Staffordshire. UK.

Clark N. 2006. Advanced Techniques in Lower Limb Exercise Therapy: Clinical Plyometrics for Enhancing Biomechanics and Neuromuscular Control of the Knee. Guest Lecture. London Sport Institute. Middlesex University and University College London. London. UK.

Clark N. 2005. Sex Differences in Lower Limb Proprioception and Neuromuscular Control: Implications for Female-Specific Physiotherapy Intervention. Invited Platform Presentation. Organization of Chartered Physiotherapists in Private Practice Cutting Edge Conference. Bristol. UK.

Clark N. 2005. Relationship Between Active Hamstring Stretch Reflex Latency and Functional Knee Stability. Manipulation Association of Chartered Physiotherapists 2005 Research Presentation Award. 2nd International Conference on Movement Dysfunction. Kinetic Control and Manipulation Association of Chartered Physiotherapists. Edinburgh International Convention Centre. Edinburgh. UK.

Clark N. 2004. Clinical Concepts in Lower Limb Functional Performance Testing. Invited Platform Presentation. British Armed Forces Defence Medical Rehabilitation Services Annual Physiotherapy Conference. Headley Court Defence Medical Rehabilitation Centre. Surrey. UK.

Clark N. 2004. Current Evidence for Predictors of Functional Knee Stability Following Anterior Cruciate Ligament Injury. Invited Platform Presentation. 1st Annual International Evidence-Based Physical Therapy Conference. Health Education Seminars. University of London. London. UK.

Clark N. 2004. Principles of Injury Rehabilitation. SportEx Medicine. 19, 6-10.

Clark N. 2003. Feedback Motor Control in Functional Stability of the Knee. Invited Platform Presentation. Organization of Chartered Physiotherapists in Private Practice Sports Physiotherapy Conference. Buckinghamshire. UK

Clark N. 2003. Functional Rehabilitation of the Lower Limb. Basic Concepts and Clinical Application. SportEx Medicine. 18, 16-21.

Hooper D, Morrissey M, Drechsler W, **Clark N**, Coufts F, McAuliffe T. 2002. Gait Analysis Six and Twelve Months Following Anterior Cruciate Ligament Surgery. Clinical Orthopaedics and Related Research. 403, 168-178.

Clark N, Gumbrell C, Rana S, Traole C, Morrissey M. 2002. Intratester Reliability and Measurement Error of the Adapted Crossover Hop for Distance. Physical Therapy in Sport. 3, 143-151.

Clark N, Gumbrell C, Rana S, Traole C, Morrissey M. 2001. Relationship Between Vertical Hop Performance and Isotonic Open and Closed Kinetic Chain Muscle Strength of the Lower Limb. Journal of Sports Sciences. 19, 18-19.

Clark N. 2001. Functional Performance Testing Following Knee Ligament Injury. Physical Therapy in Sport. 2, 91-105.

Clark N, Gumbrell C, Rana S, Traole C, Morrissey M. 2000. The Relationship Between Vertical Hop Performance and Isotonic Open and Closed Kinetic Chain Muscle Strength of the Lower Limb. Original Research Platform Presentation. British Association of Sport and Exercise Sciences Annual Conference. Liverpool John Moores University. Liverpool. UK.

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