E-Learning Course 1.10 PEACE & LOVE

Scientific References

2020-Dubois, B. & J.-F. Esculier. Soft-tissue injuries simply need PEACE and LOVE. British Journal of Sports Medicine 54 (2): 72-73. 3

2018-Hotfiel, T., R. Seil, W. Bily, W. Bloch, A. Gokeler, R. M. Krifter, F. Mayer, P. Ueblacker, L. Weisskopf & M. Engelhardt. Nonoperative treatment of muscle injuries - recommendations from the GOTS expert meeting. Journal of Experimental Orthopaedics 5: 24. 4

2018-Vuurberg, G., A. Hoorntje, L. M. Wink, B. F. W. van der Doelen, M. P. van den Bekerom, R. Dekker, C. Niek van Dijk, R. Krips, M. C. M. Loogman, M. L. Ridderikhof, F. F. Smithuis, S. A. S. Stufkens, E. A. L. M. Verhagen, R. A. de Bie & G. M. M. J. Kerkhoffs. Diagnosis, treatment and prevention of ankle sprains: update of an evidence-based clinical guideline. British Journal of Sports Medicine 52 (15): 956. 5

2017-Hainline, B., J. A. Turner, J. P. Caneiro, M. Stewart & G. L. Moseley. Pain in elite athletes—neurophysiological, biomechanical and psychosocial considerations: a narrative review. British Journal of Sports Medicine 51 (17): 1259–1264. 6

2012-Bleakley, C. M., P. Glasgow & D. C. MacAuley. Price needs updating, should we call the police? British Journal of Sports Medicine 46 (4): 220-221. 7

2012-Mueller-Wohlfahrt, H.-W., L. Haensel, K. Mithoefer, J. Ekstrand, B. English, S. McNally, J. Orchard, C. N. van Dijk, G. M. Kerkhoffs, P. Schamasch, D. Blottner, L. Swaerd, E. Goedhart & P. Ueblacker. Terminology and classification of muscle injuries in sport: The Munich consensus statement. British Journal of Sports Medicine 47 (6): 342-350. 8

2012-Raymond, J., L. L. Nicholson, C. E. Hiller & K. M. Refshauge. The effect of ankle taping or bracing on proprioception in functional ankle instability: A systematic review and meta-analysis. Journal of Science and Medicine in Sport 15 (5): 386-392. 9

2009-Kerkhoffs, G. M. M. J., P. A. A. Struijs, R. K. Marti, W. J. J. Assendelft, L. Blankevoort & C. N. van Dijk. Different functional treatment strategies for acute lateral ankle ligament injuries in adults. Cochrane Database of Systematic Reviews (3): CD002938. 10

2020-Dubois, B. & J.-F. Esculier. Soft-tissue injuries simply need PEACE and LOVE. *British Journal of Sports Medicine* 54 (2): 72-73.

Rehabilitation of soft-tissue injuries can be complex. Over the years, acronyms guiding their management have evolved from ICE to RICE, then on to PRICE and POLICE. Although widely known, these previous acronyms focus on acute management, unfortunately ignoring subacute and chronic stages of tissue healing. Our contemporary acronyms encompass the rehabilitation continuum from immediate care (PEACE) to subsequent management (LOVE). PEACE and LOVE outline the importance of educating patients and addressing psychosocial factors to enhance recovery. While anti-inflammatories show benefits on pain and function, our acronyms flag their potential harmful effects on optimal tissue repair. We suggest that they may not be included in the standard management of soft-tissue injuries.

2018-Hotfiel, T., R. Seil, W. Bily, W. Bloch, A. Gokeler, R. M. Krifter, F. Mayer, P. Ueblacker, L. Weisskopf & M. Engelhardt. Nonoperative treatment of muscle injuries - recommendations from the GOTS expert meeting. *Journal of Experimental Orthopaedics* 5: 24.

Background: Muscle injuries are some of the most common injuries in sports; they have a high recurrence rate and can result in the loss of ability to participate in training or competition. In clinical practice, a wide variety of treatment strategies are commonly applied. However, a limited amount of evidence-based data exists, and most therapeutic approaches are solely based on "best practice". Thus, there is a need for consensus to provide strategies and recommendations for the treatment of muscle injuries.

Methods: The 2016 GOTS Expert Meeting, initiated by the German-Austrian-Swiss Society for Orthopaedic Traumatologic Sports Medicine (GOTS), focused on the topic of muscle and tendon injuries and was held in Spreewald/Berlin, Germany. The committee was composed of twenty-two medical specialists. Nine of them were delegated to a subcommittee focusing on the nonoperative treatment of muscle injuries. The recommendations and statements that were developed were reviewed by the entire consensus committee and voted on by the members.

Results: The committee reached a consensus on the utility and effectiveness of the management of muscle injuries. Main results: the "PRICE" principle to target the first inflammatory response is one of the most relevant steps in the treatment of muscle injuries. Haematoma aspiration may be considered in the early stages after injury. There is presently no clear evidence that intramuscular injections are of use in the treatment of muscle injuries. The ingestion of non-steroidal anti-inflammatory drugs (NSAIDs) should be regarded critically because there is currently no hard evidence to support their use, although they are appropriate in exceptional cases.

Conclusions: The present work provides a structured overview of the various nonoperative treatment strategies of muscle injuries and evaluates their effectiveness with respect to the existing scientific evidence and clinical expertise in the context of basic science on the healing process of muscle injuries. The committee agreed that there is a compelling need for further studies, including high-quality randomized investigations to completely evaluate the effectiveness of the existing therapeutic approaches. The given recommendations may be updated and adjusted as further evidence will be generated.

2018-Vuurberg, G., A. Hoorntje, L. M. Wink, B. F. W. van der Doelen, M. P. van den Bekerom, R. Dekker, C. Niek van Dijk, R. Krips, M. C. M. Loogman, M. L. Ridderikhof, F. F. Smithuis, S. A. S. Stufkens, E. A. L. M. Verhagen, R. A. de Bie & G. M. M. J. Kerkhoffs. Diagnosis, treatment and prevention of ankle sprains: update of an evidence-based clinical guideline. *British Journal of Sports Medicine* 52 (15): 956.

This guideline aimed to advance current understandings regarding the diagnosis, prevention and therapeutic interventions for ankle sprains by updating the existing guideline and incorporate new research. A secondary objective was to provide an update related to the cost-effectiveness of diagnostic procedures, therapeutic interventions and prevention strategies. It was posited that subsequent interaction of clinicians with this guideline could help reduce health impairments and patient burden associated with this prevalent musculoskeletal injury. The previous guideline provided evidence that the severity of ligament damage can be assessed most reliably by delayed physical examination (4–5 days post trauma). After correct diagnosis, it can be stated that even though a short time of immobilisation may be helpful in relieving pain and swelling, the patient with an acute lateral ankle ligament rupture benefits most from use of tape or a brace in combination with an exercise programme.

New in this update: Participation in certain sports is associated with a heightened risk of sustaining a lateral ankle sprain. Care should be taken with non-steroidal anti-inflammatory drugs (NSAIDs) usage after an ankle sprain. They may be used to reduce pain and swelling, but usage is not without complications and NSAIDs may suppress the natural healing process. Concerning treatment, supervised exercise-based programmes preferred over passive modalities as it stimulates the recovery of functional joint stability. Surgery should be reserved for cases that do not respond to thorough and comprehensive exercise-based treatment. For the prevention of recurrent lateral ankle sprains, ankle braces should be considered as an efficacious option.

2017-Hainline, B., J. A. Turner, J. P. Caneiro, M. Stewart & G. L. Moseley. Pain in elite athletes—neurophysiological, biomechanical and psychosocial considerations: a narrative review. *British Journal of Sports Medicine* 51 (17): 1259-1264.

Pain is a common problem among elite athletes and is frequently associated with sport injury. Both injury and pain interfere with peak performance. Pain management should be based on the physiological, anatomical and psychosocial influences on the individual's pain and is not equivalent to injury management, which focuses on musculoskeletal recovery and return-to-play. This narrative review provides a foundation for understanding the differing causes and types of pain in elite athletes, thereby serving as a springboard for comprehensive pain management.

2012-Bleakley, C. M., P. Glasgow & D. C. MacAuley. Price needs updating, should we call the police? *British Journal of Sports Medicine* 46 (4): 220-221.

The acronym PRICE (protection, rest, ice, compression and elevation) has been central to acute soft tissue injury management for many years despite a paucity of high-quality, empirical evidence to support the various components or as a collective treatment package. Treatment paradigms in sports medicine must be updated based on contemporary research evidence. As a recent example, the widespread use of non-steroidal anti-inflammatory drugs in acute soft tissue injury management has been challenged, particularly with ligament and muscle injuries.

2012-Mueller-Wohlfahrt, H.-W., L. Haensel, K. Mithoefer, J. Ekstrand, B. English, S. McNally, J. Orchard, C. N. van Dijk, G. M. Kerkhoffs, P. Schamasch, D. Blottner, L. Swaerd, E. Goedhart & P. Ueblacker. Terminology and classification of muscle injuries in sport: The Munich consensus statement. *British Journal of Sports Medicine* 47 (6): 342-350.

Objective: To provide a clear terminology and classification of muscle injuries in order to facilitate effective communication among medical practitioners and development of systematic treatment strategies.

Methods: Thirty native English-speaking scientists and team doctors of national and first division professional sports teams were asked to complete a questionnaire on muscle injuries to evaluate the currently used terminology of athletic muscle injury. In addition, a consensus meeting of international sports medicine experts was established to develop practical and scientific definitions of muscle injuries as well as a new and comprehensive classification system.

Results: The response rate of the survey was 63%. The responses confirmed the marked variability in the use of the terminology relating to muscle injury, with the most obvious inconsistencies for the term strain. In the consensus meeting, practical and systematic terms were defined and established. In addition, a new comprehensive classification system was developed, which differentiates between four types: functional muscle disorders (type 1: overexertion-related and type 2: neuromuscular muscle disorders) describing disorders without macroscopic evidence of fibre tear and structural muscle injuries (type 3: partial tears and type 4: (sub)total tears/tendinous avulsions) with macroscopic evidence of fibre tear, that is, structural damage. Subclassifications are presented for each type.

Conclusions: A consistent English terminology as well as a comprehensive classification system for athletic muscle injuries which is proven in the daily practice are presented. This will help to improve clarity of communication for diagnostic and therapeutic purposes and can serve as the basis for future comparative studies to address the continued lack of systematic information on muscle injuries in the literature.

2012-Raymond, J., L. L. Nicholson, C. E. Hiller & K. M. Refshauge. The effect of ankle taping or bracing on proprioception in functional ankle instability: A systematic review and meta-analysis. *Journal of Science and Medicine in Sport* 15 (5): 386-392.

Objectives: To determine if wearing an ankle brace or taping the ankle, compared to no brace or tape, improves proprioceptive acuity in people with a history of ankle sprain or functional ankle instability.

Design: Systematic review and meta-analysis.

Methods: Studies using controlled, cross-over designs whereby participants who had sprained their ankle at least once or had functional ankle instability, underwent some form of proprioceptive sensation testing with and without ankle brace or tape, were included. Proprioceptive acuity was reported for the ankle tape/brace condition and the condition where no tape or brace was worn. Meta-analysis was employed to compare proprioceptive acuity with and without ankle tape/brace.

Results: Eight studies were included in the review. Studies measured either sense of movement or sense of joint position. The mean differences in 19 of 32 comparisons were not significant. Of the remaining mean differences, 10 were positive, indicating better proprioceptive acuity in the taped/braced condition and 3 were negative, indicating poorer proprioceptive acuity. Overall, there was no significant effect with ankle tape/brace compared to the no tape/brace condition (mean difference: 0.08°, 95% CI: −0.39 to 0.55). This finding was consistent when the two aspects of proprioception (sense of movement or joint position) were considered separately.

Conclusions: The pooled evidence suggests that using an ankle brace or ankle tape has no effect on proprioceptive acuity in participants with recurrent ankle sprain or who have functional ankle instability.

2009-Kerkhoffs, G. M. M. J., P. A. A. Struijs, R. K. Marti, W. J. J. Assendelft, L. Blankevoort & C. N. van Dijk. Different functional treatment strategies for acute lateral ankle ligament injuries in adults. *Cochrane Database of Systematic Reviews* (3): CD002938.

Background: Acute lateral ankle ligament ruptures are common problems in present health care. Early mobilisation and functional treatment are advocated as a preferable treatment strategy. However, functional treatment comprises a broad spectrum of treatment strategies and as of yet no optimal strategy has been identified.

Objectives: The objective of this review is to assess different functional treatment strategies for acute lateral ankle ligament ruptures in adults.

Search methods: We searched the Cochrane Bone, Joint and Muscle Trauma Group specialised register (December 2001), the Cochrane Controlled Trials Register (The Cochrane Library, Issue 4, 2001), MEDLINE (1966 to May 2000), EMBASE (1980 to May 2000), CURRENT CONTENTS (1993 to 1999), BIOSIS (to 1999), reference lists of articles, and contacted organisations and researchers in the field.

Selection criteria: Randomised clinical trials describing skeletally mature individuals with an acute lateral ankle ligament rupture and comparing different functional treatment strategies were evaluated for inclusion.

Data collection and analysis: Two reviewers independently assessed the quality of included trials and extracted relevant data on treatment outcome. Where appro- priate, results of comparable studies were pooled. Individual and pooled statistics are reported as relative risks (RR) for dichotomous outcome and (weighted) mean differences (WMD) for continuous outcome measures with 95 per cent confidence intervals (95%CI). Heterogeneity between trials was tested using a standard chi-squared test.

Main results: Nine trials involving 892 participants were included. Lace-up ankle support had significantly better results for persistent swelling at short-term follow up when compared with semi-rigid ankle support (RR 4.19, 95% CI 1.26 to 13.98); elastic bandage (RR 5.48; 95% CI 1.69 to 17.76); and to tape (RR 4.07, 95% CI 1.21 to 13.68). Use of a semi-rigid ankle support resulted in a significantly shorter time to return to work when compared with an elastic bandage (WMD (days) 4.24; 95% CI 2.42 to 6.06); one trial found the use of a semi-rigid ankle support saw a significantly quicker return to sport compared with elastic bandage (RR 9.60; 95% CI 6.34 to 12.86) and another trial found fewer patients reported instability at short-term follow-up when treated with a semi-rigid support than with an elastic bandage (RR 8.00; 95% CI 1.03 to 62.07). Tape treatment resulted in significantly more complications, the

majority being skin irritations, when compared with treatment with an elastic bandage (RR 0.11; 95% CI 0.01 to 0.86). No other results showed statistically significant differences.

Authors' conclusions: The use of an elastic bandage has fewer complications than taping but appears to be associated with a slower return to work and sport, and more reported instability than a semi-rigid ankle support. Lace-up ankle support appears to be effective in reducing swelling in the short-term compared with semi-rigid ankle support, elastic bandage and tape. However, definitive conclusions are hampered by the variety of treatments used, and the inconsistency of reported follow-up times. The most effective treatment, both clinically and in costs, is unclear from currently available randomised trials.