Performance and prevention among athletes: effect of lower limb injuries prevention programs

A systematic review of systematic reviews with meta-analysis

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Background

Lower limb injuries prevention programs have been tested and their efficacy has been demonstrated over the years [1,2] but their practice rates remain low. Studies suggest that if there were positive effects of such programs on performance, it could enhance compliance among athletes, coaches, the whole athlete's team and the sports physiotherapists[3,4].

Objectives:

To determine whether lower limb injury prevention programs have an impact on performance and injury prevention for athletes of all ages, levels, sexes and genders.

Method:

Systematic review of systematic reviews registered on Prospero (reg. number: CRD42019122204) with recommendations according to the GRADE system. Five scientific databases were used (CINAHL, PEDro, Pubmed, Cochrane, OVID)

Results:

4'115 references were identified, 4 systematic reviews were appraised. All 4 reviews were rated as moderate quality and kept for the analysis.

For all outcomes analyzed the strength of the recommendations is low. (Speed [SMD -0.54; (95% CI -0.90, -0.19); (p=0.003)], strength [SMD 0.05 ; (95% CI -0.18, 0.28) ; (p=0.66)], agility [SMD -0.63 ; (95% CI -1.23, -0.03); (p=0.04)], horizontal jump [SMD 0.16 ; (95% CI -0.70, 1.02) ; (p=0.71)], vertical jump [SMD 0.38 ; (95% CI 0.23, 0.54); (p<0.00001)], static balance [SMD 0.39; (95% CI -0.16, 0.95); (p=0.16)], dynamic balance [SMD 0.48 (95% CI 0.21, 0.75) ; (p=0.0005)], injury incidence [RR 0.78 ; (95% CI 0.60, 1.02); (p=0.07)])

Conclusion:

If the goal of the sport physiotherapist is to prevent injuries, the practice of prevention programs is recommendable. If the objectives are to improve the athlete's functional abilities, a targeted and specific training would be more relevant.

(1) Taylor, J. B., Waxman, J. P., Richter, S. J., & Shultz, S. J. (2015). Evaluation of the effectiveness of anterior cruciate ligament injury prevention programme training components : A systematic review and meta-analysis. *British Journal of Sports Medicine*, *49*(2), 79-87. https://doi.org/10.1136/bjsports-2013-092358

(2) Thorborg, K., Krommes, K. K., Esteve, E., Clausen, M. B., Bartels, E. M., & Rathleff, M. S. (2017). Effect of specific exercise-based football injury prevention programmes on the overall injury rate in football : A systematic review and meta-analysis of the FIFA 11 and 11+ programmes. *British Journal of Sports Medicine*, *51*(7), 562-571. https://doi.org/10.1136/bjsports-2016-097066

(3) Bien, D. P. (2011). Rationale and Implementation of Anterior Cruciate Ligament Injury Prevention Warm-Up Programs in Female Athletes: *Journal of Strength and Conditioning Research*, *25*(1), 271-285. https://doi.org/10.1519/JSC.0b013e3181fb4a5a

(4) Voskanian, N. (2013). ACL Injury prevention in female athletes : Review of the literature and practical considerations in implementing an ACL prevention program. Current Reviews in Musculoskeletal Medicine, 6(2), 158-163. https://doi.org/10.1007/s12178-013-9158-y

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