

Sport injury prevention exercise programmes work but have many challenges

Reference list

Additional reference related to page 7 of this article on implementation of IPEPS and how they integrate into practice schedules

Singh, V. R., Stokes, K., & Mckay, C. D. (2023). Feasibility and acceptability of a new shoulder-specific warm-up programme to prevent injuries in community youth rugby union as compared to the FIFA 11+. International Journal of Sports Science & Coaching, 0(0). <https://doi.org/10.1177/17479541231192170>

- Al Attar, W.S.A., Faude, O., Bizzini, M., Alarifi, S., Alzahrani, H., Almalki, R.S., Banjar, R.G., Sanders, R.H., 2021. The FIFA 11+ Shoulder Injury Prevention Program Was Effective in Reducing Upper Extremity Injuries Among Soccer Goalkeepers: A Randomized Controlled Trial. *Am J Sports Med* 49, 2293–2300. <https://doi.org/10.1177/03635465211021828>
- Alfven, G., 2010. SMS pain diary: a method for real-time data capture of recurrent pain in childhood. *Acta Paediatrica* 99, 1047–1053.
- Andersson, S.H., Bahr, R., Clarsen, B., Myklebust, G., 2017. Preventing overuse shoulder injuries among throwing athletes: a cluster-randomised controlled trial in 660 elite handball players. *British Journal of Sports Medicine* 51, 1073–1080. <https://doi.org/10.1136/bjsports-2016-096226>
- Attwood, M.J., Roberts, S.P., Trewartha, G., England, M.E., Stokes, K.A., 2018. Efficacy of a movement control injury prevention programme in adult men's community rugby union: a cluster randomised controlled trial. *British Journal of Sports Medicine* 52, 368–374. <https://doi.org/10.1136/bjsports-2017-098005>
- Axen, I., Bodin, L., Bergstrom, G., Halasz, L., Lange, F., Lovgren, P.W., Rosenbaum, A., Leboeuf-Yde, C., Jensen, I., 2012. The use of weekly text messaging over 6 months was a feasible method for monitoring the clinical course of low back pain in patients seeking chiropractic care. *Journal of Clinical Epidemiology* 65, 454–461.
- Bahr, R., 2016. Response to: "Why screening tests to predict injury do not work-and probably never will.: a critical review" *Br J of Sports Med* 50(13): 776-780.
- Bahr, R., 2009. No injuries, but plenty of pain? On the methodology for recording overuse symptoms in sports *Br J of Sports Med* 43(13): 966-972.
- Bahr, R., Clarsen, B., Derman, W., Dvorak, J., Emery, C.A., Finch, C.F., Häggglund, M., Junge, A., Kemp, S., Khan, K.M., Marshall, S.W., Meeuwisse, W., Mountjoy, M., Orchard, J.W., Pluim, B., Quarrie, K.L., Reider, B., Schwellnus, M., Soligard, T., Stokes, K.A., Timpka, T., Verhagen, E., Bindra, A., Budgett, R., Engebretsen, L., Erdener, U., Chamari, K., 2020. International Olympic Committee consensus statement: methods for recording and reporting of epidemiological data on injury and illness in sport 2020 (including STROBE Extension for Sport Injury and Illness Surveillance (STROBE-SIIS)). *Br J Sports Med* 54, 372–389. <https://doi.org/10.1136/bjsports-2019-101969>
- Barden, C., Stokes, K.A., McKay, C.D., 2021. Implementation of the Activate injury prevention exercise programme in English schoolboy rugby union. *BMJ Open Sport Exerc Med* 7, e001018. <https://doi.org/10.1136/bmjsem-2020-001018>
- Baroni, B.M., Oliveira Pena Costa, L., 2021. Evidence-Based Prevention of Sports Injuries: Is the Sports Medicine Community on the Right Track? *J Orthop Sports Phys Ther* 51, 91–93. <https://doi.org/10.2519/jospt.2021.0104>
- Bittencourt, N.F.N., Meeuwisse, W.H., Mendonça, L.D., Nettel-Aguirre, A., Ocarino, J.M., Fonseca, S.T., 2016. Complex systems approach for sports injuries: moving from risk factor

- identification to injury pattern recognition-narrative review and new concept. *Br J Sports Med* 50, 1309–1314. <https://doi.org/10.1136/bjsports-2015-095850>
- Brooks, J.H.M., Fuller, C.W., 2006. The Influence of Methodological Issues on the Results and Conclusions from Epidemiological Studies of Sports Injuries. *Sports Medicine* 36, 459–472. <https://doi.org/10.2165/00007256-200636060-00001>
- Clarsen, B., Bahr, R., 2014. Matching the choice of injury/illness definition to study setting, purpose and design: one size does not fit all! *Br J of Sports Med* 48, 510–512. <https://doi.org/10.1136/bjsports-2013-093297>
- Clarsen, B., Rønse, O., Myklebust, G., Flørenes, T.W., Bahr, R., 2014. The Oslo Sports Trauma Research Center questionnaire on health problems: a new approach to prospective monitoring of illness and injury in elite athletes. *Br J of Sports Med* 48, 754–760. <https://doi.org/10.1136/bjsports-2012-092087>
- Coppock, R.J., Etherington, J., Wills, A.K., 2011. The effects of exercise for the prevention of overuse anterior knee pain: a randomized controlled trial. *Am J Sports Med* 39, 940–948.
- Donaldson, A., Finch, C.F., 2012. Planning for implementation and translation: seek first to understand the end-users' perspectives. *Br J of Sports Med* 46, 306–307. <https://doi.org/10.1136/bjsports-2011-090461>
- Dyk, N. van, Behan, F.P., Whiteley, R., 2019. Including the Nordic hamstring exercise in injury prevention programmes halves the rate of hamstring injuries: a systematic review and meta-analysis of 8459 athletes. *Br J Sports Med* 53, 1362–1370. <https://doi.org/10.1136/bjsports-2018-100045>
- Ekegren, C.L., Donaldson, A., Gabbe, B.J., Finch, C.F., 2014. Implementing injury surveillance systems alongside injury prevention programs: evaluation of an online surveillance system in a community setting. *Injury Epidemiology* 1, 19–19. <https://doi.org/10.1186/s40621-014-0019-y>
- Ekegren, C.L., Gabbe, B.J., Finch, C.F., 2016. Sports Injury Surveillance Systems: A Review of Methods and Data Quality *Sports Medicine* 46, 49–65.
- Emery, C.A., Hagel, B., Morrongiello, B.A., 2006. Injury prevention in child and adolescent sport: Whose responsibility is it? *Clinical Journal of Sport Medicine* 16, 514–521.
- Emery, C.A., Roy, T.O., Whittaker, J.L., Nettel-Aguirre, A., van Mechelen, W., 2015. Neuromuscular training injury prevention strategies in youth sport: a systematic review and meta-analysis. *Br J of Sports Med* 49, 865–870. <https://doi.org/10.1136/bjsports-2015-094639>
- Finch, C., 2006. A new framework for research leading to sports injury prevention. *Journal of Science and Medicine in Sport* 9, 3–9. <https://doi.org/10.1016/j.jsams.2006.02.009>
- Gabbe, B., Finch, C.F., Wajswelner, H., Bennell, K., 2003. Does community-level Australian football support injury prevention research? *Journal of Science and Medicine in Sport* 6, 231–236.
- Gabbett, T.J., 2020. Debunking the myths about training load, injury and performance: empirical evidence, hot topics and recommendations for practitioners. *Br J Sports Med* 54, 58–66. <https://doi.org/10.1136/bjsports-2018-099784>
- Gabbett, T.J., 2016. The training-injury prevention paradox: should athletes be training smarter and harder? *Br J Sports Med* 50, 273–+.
- Gilchrist, J., Mandelbaum, B.R., Melancon, H., Ryan, G.W., Silvers, H.J., Griffin, L.Y., Watanabe, D.S., Dick, R.W., Dvorak, J., 2008. A randomized controlled trial to prevent noncontact anterior Cruciate ligament injury in female collegiate soccer players *Am J sports Med* 36, 1476–1483.
- Gosselin, V., Boccanfuso, D., Laberge, S., 2020. Social return on investment (SROI) method to evaluate physical activity and sport interventions: a systematic review. *International Journal of Behavioral Nutrition and Physical Activity* 17, 26. <https://doi.org/10.1186/s12966-020-00931-w>
- Grooms, D.R., Palmer, T., Onate, J.A., Myer, G.D., Grindstaff, T., 2013. Soccer-Specific Warm-Up and Lower Extremity Injury Rates in Collegiate Male Soccer Players. *Journal of Athletic Training* 48, 782–789. <https://doi.org/10.4085/1062-6050-48.4.08>

- Hanson, D., Allegrante, J.P., Sleet, D.A., Finch, C.F., 2014. Research alone is not sufficient to prevent sports injury. *Br J of Sports Med* 48, 682–684. <https://doi.org/10.1136/bjsports-2012-091434>
- Hewett, T.E., 2016. Response to: “Why screening tests to predict injury do not work-and probably never will.: a critical review” *Br J Sports Med* 50, 1353–1353.
- Hislop, M.D., Stokes, K.A., Williams, S., McKay, C.D., England, M.E., Kemp, S.P.T., Trewartha, G., 2017. Reducing musculoskeletal injury and concussion risk in schoolboy rugby players with a pre-activity movement control exercise programme: a cluster randomised controlled trial. *Br J of Sports Med* 51, 1140–1146. <https://doi.org/10.1136/bjsports-2016-097434>
- Kiani, A., Hellquist, E., Ahlqvist, K., Gedeborg, R., Michaelsson, K., Byberg, L., 2010. Prevention of soccer-related knee injuries in teenaged girls. *Archives of Internal Medicine* 170, 43–49.
- LaBella, C.R., Huxford, M.R., Grissom, J., Kim, K.Y., Peng, J., Christoffel, K.K., 2011. Effect of neuromuscular warm-up on injuries in female soccer and basketball athletes in urban public high schools: cluster randomized controlled trial. *Archives of Pediatrics and Adolescent Medicine* 165, 1033–1040.
- Lauersen, J.B., Bertelsen, D.M., Andersen, L.B., 2014. The effectiveness of exercise interventions to prevent sports injuries: a systematic review and meta-analysis of randomised controlled trials. *British Journal of Sports Medicine* 48, 871–877. <https://doi.org/10.1136/bjsports-2013-092538>
- Leppänen, M., Aaltonen, S., Parkkari, J., Heinonen, A., Kujala, U.M., 2014. Interventions to prevent sports related injuries: a systematic review and meta-analysis of randomised controlled trials. *Sports medicine (Auckland, N.Z.)* 44, 473–486. <https://doi.org/10.1007/s40279-013-0136-8>
- Ljungqvist, A., Jenoure, P., Engebretsen, L., Alonso, J.M., Bahr, R., Clough, A., Bondt, G.D., Dvorak, J., Maloley, R., Matheson, G., Meeuwisse, W., Meijboom, E., Mountjoy, M., Pelliccia, A., Schwellnus, M., Sprumont, D., Schamasch, P., Gauthier, J.B., Dubi, C., Stupp, H., Thill, C., 2009. The International Olympic Committee (IOC) Consensus Statement on periodic health evaluation of elite athletes March 2009. *Br J of sports Med* 43, 631–643.
- Mandelbaum, B.R., Silvers, H.J., Watanabe, D.S., Knarr, J.F., Thomas, S.D., Griffin, L.Y., Kirkendall, D.T., Garrett, W., 2005. Effectiveness of a neuromuscular and proprioceptive training program in preventing anterior cruciate ligament injuries in female athletes - 2-year follow-up. *Am J of Sports Med* 33, 1003–1010.
- Meeuwisse, W.H., Tyreman, H., Hagel, B., Emery, C., 2007. A dynamic model of etiology in sport injury: the recursive nature of risk and causation. *Clinical journal of sport medicine : official journal of the Canadian Academy of Sport Medicine* 17, 215–219. <https://doi.org/10.1097/JSM.0b013e3180592a48>
- Mendonça, L.D.M., Schuermans, J., Denolf, S., Napier, C., Bittencourt, N.F.N., Romanuk, A., Tak, I., Thorborg, K., Bizzini, M., Ramponi, C., Paterson, C., Hägglund, M., Malisoux, L., Al Attar, W.S.A., Samukawa, M., Esteve, E., Bakare, U., Constantinou, M., Schneiders, A., Cavallieri Gomes, A., Florentz, D., Ozer Kaya, D., Indra Lesmana, S., Harøy, J., Kuparinen, V., Philips, N., Jenkins, W., Wezenbeek, E., Witvrouw, E., 2022. Sports injury prevention programmes from the sports physical therapist’s perspective: An international expert Delphi approach. *Physical Therapy in Sport* 55, 146–154. <https://doi.org/10.1016/j.ptsp.2022.04.002>
- Minnig, M.C., Hawkinson, L., Root, H.J., Driban, J., DiStefano, L.J., Callahan, L., Ambrose, K.R., Spang, J.T., Golightly, Y.M., 2022. Barriers and facilitators to the adoption and implementation of evidence-based injury prevention training programmes: a narrative review. *BMJ Open Sport & Exercise Medicine* 8, e001374. <https://doi.org/10.1136/bmjsem-2022-001374>
- O’Brien, J., Finch, C.F., 2017. Injury Prevention Exercise Programs for Professional Soccer: Understanding the Perceptions of the End-Users. *Clinical Journal of Sport Medicine* 27, 1–9.
- Soligard, T., Nilstad, A., Steffen, K., Myklebust, G., Holme, I., Dvorak, J., Bahr, R., Andersen, T.E., 2010. Compliance with a comprehensive warm-up programme to prevent injuries in youth football. *Br J Sports Med* 44, 787–793.

- Steffen, K., Emery, C. a, Romiti, M., Kang, J., Bizzini, M., Dvorak, J., Finch, C.F., Meeuwisse, W.H., 2013. High adherence to a neuromuscular injury prevention programme (FIFA 11+) improves functional balance and reduces injury risk in Canadian youth female football players: a cluster randomised trial. *British journal of sports medicine* 47, 794–802.
<https://doi.org/10.1136/bjsports-2012-091886>
- Stephenson, S.D., Kocan, J.W., Vinod, A.V., Kluczynski, M.A., Bisson, L.J., 2021. A Comprehensive Summary of Systematic Reviews on Sports Injury Prevention Strategies. *Orthop J Sports Med* 9, 23259671211035776. <https://doi.org/10.1177/23259671211035776>
- 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, 562–571. <https://doi.org/10.1136/bjsports-2016-097066>
- van Mechelen, W., Hlobil, H., Kemper, H.C., 1992. Incidence, severity, aetiology and prevention of sports injuries. A review of concepts. *Sports Medicine* 14, 82–99.
- van Reijen, M., Vriend, I., van Mechelen, W., Finch, C.F., Verhagen, E.A., 2016. Compliance with Sport Injury Prevention Interventions in Randomised Controlled Trials: A Systematic Review. *Sports Medicine* 46, 1125–1139.
- Verhagen, E., van Dyk, N., Clark, N., Shrier, I., 2018. Do not throw the baby out with the bathwater; screening can identify meaningful risk factors for sports injuries. *Br J of Sports Med* 52, 1223–1223.
- Verhagen, E., van Nassau, F., 2019. Implementation science to reduce the prevalence and burden of MSK disorders following sport and exercise-related injury. *Best practice & research. Clinical rheumatology* 33, 188–201. <https://doi.org/10.1016/j.berh.2019.02.011>
- Vriend, I., Gouttebarge, V., Finch, C.F., van Mechelen, W., Verhagen, E., 2017. Intervention Strategies Used in Sport Injury Prevention Studies: A Systematic Review Identifying Studies Applying the Haddon Matrix. *Sports Medicine* 47, 2027–2043.
- Whalan, M., Lovell, R., Steele, J.R., Sampson, J.A., 2019. Rescheduling Part 2 of the 11+ reduces injury burden and increases compliance in semi-professional football. *Scandinavian Journal of Medicine and Science in Sports* 29, 1941–1951. <https://doi.org/10.1111/sms.13532>
- Whittaker, J.L., Boysen, N., la Motte, S.D., Dennett, L., Lewis, C.L., Wilson, D., McKay, C., Warner, M., Padua, D., Emery, C.A., Stokes, M., 2017. Predicting sport and occupational lower extremity injury risk through movement quality screening: a systematic review. *Br J of Sports Medicine* 51, 580–.
- Wright, A.A., Ness, B.M., Donaldson, M., Hegedus, E.J., Salamh, P., Cleland, J.A., 2021. Effectiveness of shoulder injury prevention programs in an overhead athletic population: A systematic review. *Phys Ther Sport* 52, 189–193. <https://doi.org/10.1016/j.ptsp.2021.09.004>