

(77.5%) nor of guidelines for dealing with infected athletes (80.0%) or for return to sports after a coronavirus infection (88.6%). Preventive measures mentioned included basic hygiene, measures to reduce personal contacts or virus transmission, or to improve traceability. During confinement, higher age ($p = 0.004$) and training in a club-setting ($p < 0.001$) were associated with reduced sporting activity, while the availability of online training ($p = 0.030$) was linked to increased extent and intensity levels. Lower age ($p = 0.001$) and recreational sports level ($p = 0.005$) were associated with decreased activity after confinement.

Conclusions While isolation is a necessary measure to protect public health, it also alters physical activity.

434 THE EFFECTIVENESS OF A VOLLEYBALL INJURY PREVENTION PROGRAM TAILORED TO YOUTH PLAYERS

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Background In the Netherlands, volleyball is ranked among the top 5 sports with the highest number of injuries, and over 35% of these injuries are sustained by youth players.

Objective To assess the effectiveness of a volleyball specific youth injury prevention program on injury incidence, injury severity and injury burden.

Design Quasi-experimental study based on a prospective controlled design with a follow-up period of one volleyball season. Randomization was based on competition region (2 intervention regions, 2 control regions). Exposure data of youth volleyball players were collected by trainers on a weekly basis. In case of absence due to a volleyball related injury, injury details were obtained.

Setting Youth teams playing in the Dutch volleyball competition.

Participants Players aged under 17 years who train and compete in the Dutch volleyball. In total, 518 players were included in this study (286 intervention group, 232 control group).

Intervention A volleyball specific warming-up programme tailored to youth, aimed at increasing motor ability and neuromuscular control.

Main Outcome Measurements Injury incidence, injury severity and injury burden. Subgroup analyses for injury onset (acute or overuse) and injury location (upper extremity or lower extremity).

Results No overall effect of the intervention was reported for injury incidence, injury severity and injury burden. Subgroup analysis showed that upper extremity injury rate was reduced by ~60% (HR 0.41, 95%CI 0.20 – 0.83). A trend was found suggesting that the risk for an acute injury was reduced by ~40% (HR 0.61, 95%CI 0.36 – 1.02).

Conclusions No overall effect of the youth volleyball injury prevention program was found. The preventive program was, however, very effective in reducing upper extremity injury

rates in youth players. With respect to acute volleyball related injuries, results were promising.

435 COMPLIANCE WITH AN INDIVIDUALIZED VS. THE FIFA 11+ INJURY PREVENTION PROGRAM

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Background Players' compliance with injury prevention programs (IPP) can significantly affect the effectiveness of such programs in injury reduction.

Objective To evaluate players' compliance with an individualized IPP to compared to the established FIFA 11+ IPP.

Design Cross-sectional study

Setting Semi-professional football. The data was obtained from a pilot study comparing the effectiveness of individualized vs. generalized (i. e. one-size-fits-all) IPPs.

Participants 72 semi-professional soccer players from 4 clubs (age: 22.3 ± 4.7 ; weight: 75 ± 10 kg; height: 177 ± 9 cm) participated in the study and were divided into two groups of 1) Individualized and 2) FIFA 11+.

Interventions The individualized group completed 6 weeks of unsupervised, individualized IPP based on their functional movement screen scores. FIFA 11+ group completed 6 weeks of FIFA 11+. After the 6 weeks (18 sessions), the compliance with programs was assessed using an online questionnaire.

Main Outcome Measurements Compliance with the IPP defined as the players' self-assessment of how correctly they followed all instructions during all sessions. Players were classified based on their self-report as fully complied (carried out 16 and more successful sessions), partially complaint (8–15 sessions) and not complaint (less than 8 session).

Results A total of 29 (81%) players in the individualized PP group said they had fully complied during the 6 weeks of individualized IPP; 5 (14%) said they had been partially compliant and 2 (5%) classified as not compliant. In FIFA 11+ group 15 (41%) had fully complied; 14 (39%) said they had been partially compliant and 7 (20%) were classified as not compliant.

Conclusions The results indicate that an individualized IPP may be superior to 11+ IPP in terms of players' compliance. Further research needs to expand the sample size and to investigate the relationship between compliance and injury reduction effect of individualized IPPs.

436 HOME-BASED INJURY PREVENTION PROGRAM DURING COVID-19 LOCKDOWN REDUCED INJURIES DURING THE REMAINING SEASON IN SEMI-PROFESSIONAL FOOTBALL PLAYERS

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Background The Covid-19 pandemic caused a forced lockdown longer than the normal annual season break in Iranian

football leagues. Return to football after such a long break without organized team training might increase the rate of injuries.

Objective To investigate the effectiveness of a home-based injury prevention program (IPP) on reducing injuries in semi-professional football players.

Design Prospective cohort study based on a randomized controlled trial.

Setting Iranian semi-professional male football players.

Participants A total of 178 players from 11 clubs participated in study. From the total of 178 subjects (90 subjects in the intervention group and 88 in control group), 10 subjects dropped out due to a positive Covid-19 test, leaving 87 subjects in the intervention group and 81 in the control group for the final analysis.

Interventions The IPP consisted of 8 weeks home training program with focus on the most common injury locations. The IPP was addressed strength, mobility and balance via neuromuscular and body-weight training with no equipment.

Main Outcome Measurements Non-contact injury rate in the remaining season(8 weeks), training and competition exposure, compliance with the IPP.

Results Player compliance with the IPP was very good (94%). Exposure data were comparable between groups. Pooled estimates for total (training and match) incidence per 1000 h was 7.8 for the intervention group and 15.9 for control group. A lower proportion of players in the intervention group experienced injuries (29% [27 of 87]) compared with the control group (75% [61 of 81]; relative risk [RR], 0.41; 95% confidence interval [CI], 0.29–0.61; $p < 0.001$).

Conclusions A home-based, unsupervised IPP was shown to be effective in reducing the number of injuries in semi-professional male football players after the Covid-19 break. This indicates that going back to training and match play without accompanying IPP cannot be regarded optimal.

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THE EFFECTIVENESS OF EXERCISE INTERVENTIONS TO PREVENT SHOULDER INJURIES IN ATHLETES: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background The literature supports exercise to avert injuries in the lower extremity and injuries in general. Nevertheless, the utilisation of exercise strategies to prevent sports-related shoulder injuries remain unproven. This systematic review's primary aim is to evaluate the effectiveness of exercise interventions to prevent shoulder injuries in athletes.

Methods Twelve (12) databases were searched from inception up until July 2021. The search identified nineteen (19) eligible studies that were included and critically appraised. Data extraction and synthesis followed the JBI Reviewer's Manual for Systematic Reviews of Effectiveness and PRISMA guidelines. The data was synthesised utilising the JBI SUMARI to produce several meta-analyses.

Results The pooled results indicated a statistically significant result with moderate heterogeneity in favour of the application of exercise interventions to prevent shoulder injuries

[0.73 (0.62 – 0.87) RR, 95% CI, $P = 0$]. An analysis of upper extremity injury shows a greater effect but with substantial heterogeneity [0.60 (0.52 - 0.68) RR, 95% CI, $P = 0.001$]. Heterogeneity was fully resolved with the removal of poor methodological studies and reveals a larger statistically significant effect [0.51 (0.36 - 0.71) RR, 95% CI, $P = 0.002$]. Subgroup analysis revealed a slightly greater effect for acute shoulder injuries [0.75 (0.58 – 0.96) RR, 95% CI, $P = 0.024$] compared to overuse injuries [0.75 (0.58 – 0.96) RR, 95% CI, $P = 0.05$]. Shoulder-specific programmes showed a statistically significant but inferior effect [0.80 (0.68 - 0.95) RR, 95% CI, $P = 0.01$] compared to general programmes [0.52 (0.35 - 0.76) RR, 95% CI, $P = 0.001$].

Conclusion This systematic review with meta-analysis supports and advocates for the use of exercise interventions to prevent shoulder injuries in sport. The programmes utilised can prevent both acute and overuse shoulder injuries. Exercise interventions designed to address the shoulder specifically were not superior to programmes targeting the shoulder incidentally.

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DOES A PEER TO PEER LEARNING TECHNOLOGY INTEGRATED WORKSHOP FACILITATE NEUROMUSCULAR TRAINING INJURY PREVENTION PROGRAM COACH LEARNING?

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Background Workshops are used to educate coaches on Neuromuscular Training (NMT) warm-ups to reduce the risk of youth sport injury. Currently, there is no research assessing different learning strategies and its influence on coaches' self-efficacy and knowledge after attending a workshop.

Objective To evaluate whether a peer-to-peer (P2P) learning technology integrated workshop, improved coaches' self-efficacy and ability to identify NMT exercise errors compared to a standard workshop.

Design Randomized controlled trial.

Setting Youth soccer clubs in Calgary, Alberta, Canada.

Participants Eighty-five recreational youth soccer coaches.

Intervention Coaches within each club randomly attended one of two workshops offered to learn a NMT warm-up: the intervention workshop (technology-integrated instruction), or control workshop (standard instruction).

Main Outcome Measures At the end of the workshop, the soccer NMT warm-up exercise test, a video-based test where coaches identify common NMT exercise errors, was completed. At the beginning and end of the workshop, the soccer NMT warm-up self-efficacy scale was completed to assess coaches' self-efficacy change in their ability to identify NMT exercises errors on a 7-point Likert scale.