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Prediction of injuries, traumas and musculoskeletal pain in elite Paralympic volleyball players

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INTRODUCTION:
Volleyball is believed not to be a particularly dangerous sport. Nevertheless, the previous research conducted by the authors of the present study suggests that the rates of musculoskeletal pain and injuries among elite sitting volleyball players are high and may be intensified by compensatory mechanisms(Gaweł et al., 2021, Zwierzchowska et al. 2022abc). However, there is still lack of research that evaluated this issue in case of initial playing position i.e. sitting vs. standing and type of impairment. Thus, the study aimed to identify the prevalence and location of injuries, traumas and musculoskeletal pain in Paralympic and Olympic volleyball players based on an impairment and initial playing position (sitting/standing) and to identify the predictors of the abovementioned variables using a classification and regression tree (CRT)
METHODS:
75 male and female(age=34.1±;11.1;BH=1.83±0.1;BM=82.3±15.2)elite Paralympic and Olympic volleyball players from 7 countries took part in the study. They were divided into SG1 of lateral amputee Paralympic players, SG2 of able-bodied Paralympic volleyball players and SG3 of able-bodied Olympic volleyball players. A direct-participatory observation method was used in the study including a modified injuries and traumas survey questionnaire from Zwierzchowska et al.(2020) and NMQ-7 questionnaire. The CRT analysis was used to predict which training-related (sitting/standing playing position) and body-related (lateral amputation/no amputation) variables better classified the risk of the prevalence of injuries and theirs effect on athlete's health and sports performance.
RESULTS:
Both SG1 and SG3 were characterized by similar prevalence of musculoskeletal pain (60/62) and injuries (55/53), while the lowest prevalence was identified in SG2. Both humeral and knee joint were the most frequent locations of the musculoskeletal pain and/or injuries in all studied groups, excepting low back pain that occurred mostly in SG1 and SG3. In SG1 musculoskeletal pain and injuries located mostly in the upper limbs, what is in the contrary to SG3, in whom they occurred in lower segments of the body.For SG1 the CRT analysis showed 7 significant influencing factors on a five-stage tree, while in SG2 and SG3 9 significant factors were identified. Eighteen nodes were mainly established by injury – ankle(level 1), break in training for 2 weeks(level 2), surgical treatment after injury and injury during trainings(level 3), overload injuries(level 4), fraction and low back pain(level 5) in both studied groups, while in SG2 and SG3 additional influencing factors were identified including injury – fingers(level 2) , injury – elbow joint(level 3).
CONCLUSION:
1.Extrinsic compensatory mechanism (initial playing position - sitting/standing) may be a crucial variable for prediction of musculoskeletal pain, injuries and traumas in volleyball players.
2.Lower limb amputation seems to impact on the prevalence of musculoskeletal complaints.
3.Training volume may predict LBP.

Topic: Disabilities

Presentation Oral