Review of sport injures for teams and athletes

UDC 796 + 06

PhD, Associate Professor **T.A. Zenkova**[1]
PhD, Associate Professor **S.A. Shengelaya**[2]
PhD, Associate Professor **I.V. Groshevikhin**[2]
S.Yu. Chabovskiy[3]
[1]Rostov State Transport University, Rostov-on-Don
[2]The Academy of Physical Culture and Sport of the Southern Federal University, Rostov-on-Don
[3]Don State Technical University, Rostov-on-Don

Corresponding author: zata-70@mail.ru

Received by the editorial office on 20.05.2024

Abstract

Objective of the research was to analyses the causes and conduct a comparative analysis of the causes and consequences and the incidence of injuries for sport teams and athletes.

Methods and structure of the study. The athletes' sports activities were analyzed based on parameters such as volume, intensity, and number of competitions, as well as the nature and intensity of sports injuries. The experiment involved 150 student athletes from the technical school of the Rostov State University of Railway Engineering. The athletes' sports activities were analyzed based on parameters such as volume, intensity, and number of competitions, as well as the nature and intensity of sports injuries. The sports disciplines presented included track and field, swimming, judo, table tennis, basketball, football, and volleyball.

Results and conclusions. It was found that the injury rate was significantly higher in team sports compared to individual sports (62% in team sports, 38% in individual sports). Based on the number of injuries sustained during competitions and training activities, it was concluded that team sports athletes have a higher injury rate – 2,6 persons/injuries versus 1,7 persons/injuries in individual sports. Participation in team sports is associated with a higher risk of injury regardless of the intensity of the load.

Keywords: *incidence of injuries, sports injuries, sport teams, training, injury characteristics, students, competitions.*

Introduction. Physical activity of the younger generation is widely promoted all over the world due to its positive impact on the physical and mental development of the body. In the process of training and competitive activities, overfatigue and overtraining may occur as potential factors that can lead to sports injuries. The results of studies by specialists in this field V.O. Agranovich, E.V. Filippova show that injuries from overfatigue are largely associated with a large number of training sessions during the previous two days compared to sports injuries [1, 2]. The type of sport is an additional component of the risk of injuries associated with training. A number of studies show that the nature and intensity of injuries varies depending on the type of sport. Researchers note that the most serious injuries are received by athletes in team sports such as basketball and football [3].

Objective of the research was to analyses the causes and conduct a comparative analysis of the causes and consequences and the incidence of injuries for sport teams and athletes.

Methods and structure of the study. The experiment involved 150 student athletes from the technical school of the Rostov State Transport University, each of whom was observed for two academic years from 2021 to 2023. The age of the participants was 15-19 years. The observation period was 25 weeks in each academic year, two days a week, which amounted to 100 training and competition days organized throughout the academic process, from late September to early June of two academic years.

The study analyzed the athletes' sports activities according to such parameters as the volume, intensity and number of competitions, as well as the nature and intensity of sports injuries. The sports disciplines presented included athletics, swimming, judo, table tennis, basketball, football and volleyball.

Personal data - age, gender, sports activities and history of injuries over the past three years before the

study were collected using a questionnaire. In case of injuries, athletes were asked to put a mark in the sports diary on the day of the injury. A sports injury was functionally defined as a physical complaint that forces an athlete to interrupt or modify their usual sports activity for at least one training session. Injury characteristics were collected using a standardized questionnaire completed directly by the athlete. In addition, injuries were divided into overuse injuries (microtraumas caused by chronic overuse without a single identifiable cause) and traumatic injuries. Injury severity was defined based on days of absence from training as mild (0-3 days), minor (4-7 days), moderate (8-28 days), or severe (>28 days). Total sports activity was calculated separately for training and competition. If several competitions were held on the same day, such as a game tournament or disciplines with different heats, they were considered as one competition. Injury incidence was calculated as the number of injuries per 100 days of exposure. All data are presented as percentages or mean results. Comparisons of characteristics related to participation in sports competitions between team and individual sports were made using independent samples t-test. Significance was accepted at p<0,05.

Results of the study and discussion. The study revealed that 60% of student-athletes are involved in team sports. During the observation of sports activities, it was found that 54% of athletes were injured at least once. A total of 92 injuries were recorded, of which 62% occurred in team sports. In individual sports, the distribution of injuries by anatomical factor differed significantly (p<0,001), with a higher proportion of lower limb injuries and a lower proportion of upper limb and head and neck injuries (Table 1). No differences were found between team and individual sports in the distribution of injury types (p=0,34), severity (p=0,18), and categories (p=0,25).

Distribution of those involved in team sports: volleyball – 35%, basketball – 36%, football – 29%. In individual sports, the distribution of those involved showed: track and field – 31%, swimming – 27%, judo – 22%, table tennis – 20%.

The characteristics of sports activities of athletes in team and individual sports are presented in the figure, table 2.

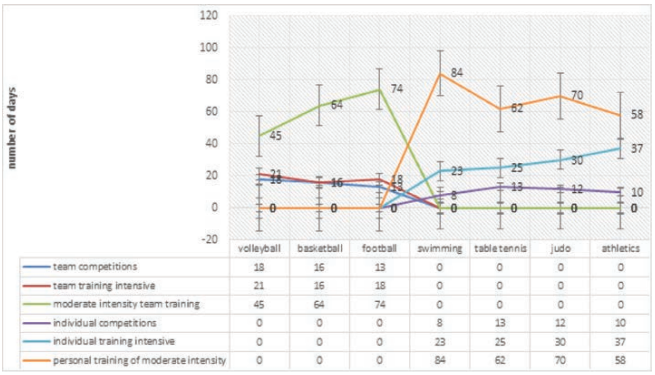
In team sports, the number of competitions per 100 days was significantly higher than in individual sports, and the number of intensive training sessions per 100 days was lower. The rates of injuries sustained during sports training activities are expressed as average values and were noted before the first injury and after the end of the study period.

Table 1. Characteristics of injuries in team and individual sports

Characteristics of injury	Team sports (57 people) Number (%)	Individual sports (35 people) Number (%)
Place of injury		
Upper limb	7 (12,3%)	8 (22,8%)
Lower limb	44 (77,2%)	21 (60%)
Torso	5 (8,7%)	5 (14,3%)
Head-neck	1 (1,8%)	1 (2,9%)
Type of injury		
Muscles and tendons	20 (35,1%)	15 (42,9%)
Capsules and ligaments	15 (26,3%)	8 (22,8%)
Bone fracture or other injury	9 (15,8%)	6 (17,1%)
Concussion	10 (17,5%)	4 (11,4%)
Nervous system	1 (1,8%)	1 (2,9%)
Other injuries	2 (3,5%)	1 (2,9%)
Severity of injury		
Mild (0-3 days)	19 (33,3%)	10 (28,6%)
Minor (4-7 days)	13 (22,9%)	9 (25,7%)
Moderate (8-28 days)	17 (29,8%)	9 (25,7%)
Severe (>28 days)	8 (14%)	7 (20%)
Injury category		
Traumatic	41 (71,9%)	25 (71,4%)
Overwork injury	16 (28,1%)	10 (28,6%)

Table 2. Indicators of competitive and training activity (average value in team and individual sports)

Competitions and types of training	Team sports	Individual sports
Number of competitions	15,66	10,75
Number of intensive training sessions	18,33	28,75
Number of moderate-intensity training sessions	61,00	68,50



Distribution of competitions and training intensity by sport

Having determined the average indicators of competitions in team and individual sports, it was found that the injury rate during one competition day was 3,7 persons/injuries and 3,3 persons/injuries, respectively. Further, when conducting intensive training loads, the number of injured people per training session was 3,1 persons/injuries in team sports, while in individual sports the figure was 1,2 persons/injuries. When analyzing the training process of moderate intensity, the number of injuries per training unit was 0,9 persons/injuries in team sports and 0,6 persons/injuries in individual sports.

Thus, taking into account the average indicators of competitive and training activities, we obtain the result that the injury rate in team sports was 7,7 persons/injuries versus 5,1 persons/injuries in individual sports. And the overall injury rate in team and individual sports is 2,6 and 1,7 persons/injury, respectively.

Conclusions. Team sports players have significantly more injuries than individual sports players, which confirmed our assumption. Significant differences in team and individual sports are reflected in the indicator characterizing the ratio of the number of competitions to the intensity of athletes' injuries in the general characteristics of sports, games and training activities (Table 2).

The results show that team sports are more likely to have traumatic illnesses and are characterized by injuries from overexertion. This aspect is due to the fact that these sports involve more game contacts, and the player's role in the team depends on many factors of social interaction. Moreover, a team athlete trains in a dynamic and rapidly changing environment, in which a high frequency of jumps, accelerations and turns can create high loads on the musculoskeletal system and, thus, contribute to injuries.

Playing a greater number of matches increases an athlete's susceptibility to the influence of this factor, which increases the risk of injury due to high physical loads, shorter recovery time after competitions and training. In individual sports, the planning and organization of the training process is developed individually for each athlete at the pre-competition stage, which reduces the risk of a negative reaction of the body to physical activity.

References

1. Agranovich V.O., Agranovich N.V. Analiz sportivnogo travmatizma pri zanyatiyakh fizicheskoy kulturoy i sportom i sozdaniye usloviy po yego snizheniyu. Mediko-farmatsevticheskiy zhurnal «Puls». Zdorovye i obrazovaniye v XXI veke. 2017. No. 2. Vol. 19. pp. 77-81.
2. Filippova E.V. K voprosu o bezopasnosti na zanyatiyakh fizicheskoy kulturoy v vuze. Trudy Rostovskogo gosudarstvennogo universiteta putey soobshcheniya. 2021. No. 2 (55). pp. 130-133.
3. Yasyukevich A.S., Gulevich N.P., Mukha P.G. Analiz urovnya i struktury sluchayev sportivnogo travmatizma v otdelnykh vidakh sporta. Prikladnaya sportivnaya nauka. 2016. No. 1 (3). pp. 89- 98.