

Assessment of health status of junior athletes practicing basketball and volleyball

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Abstract. Any disorder of health status in athletes is analyzed in terms of identifying and eliminating the specific causes of appearance. The aim of your research was the assessment of health status of junior athletes practicing basketball and volleyball and development of preventive measures. *Material and Method.* A longitudinal descriptive study of health status of junior athletes practicing basketball and volleyball was conducted. *Results.* There are some specific peculiarities of injury and illnesses among athletes practicing sports games. The most common injuries in athletes practicing volleyball and basketball were registered in hand and foot joints. Among other complaints related by athletes are visual disturbances and the presence of skin diseases. The most common symptoms of the overtraining that occur in athletes are the moodiness and joint pains. *Conclusions.* Subjective assessment of health status of junior athletes highlighted the presence of chronic and acute pathologies among athletes. Taking into account the results of researches, a set of measures has been developed to prevent unfavorable functional states of athletes' body, to improve and strengthen their health status. Thus, it is very important to perform some activities promoting health among athletes, which rely on the knowledge of negative effects, caused by failure to comply with the hygiene conditions of training and behavior, on the importance of medical examinations etc.

Key words: *health status, young athletes, sports injury, preventive measures.*

Introduction

Issues related to the health of junior athletes are of major relevance, determined by morpho-functional peculiarities of a developing body, by its vulnerability to risk factors, training effort and decrease of age limit (1-6). Supplementary (additional) overloads of practicing sport enhance more the vulnerability of the developing body, compared with their peers who do not practice sport (5).

According to some researchers, among the factors with negative impact on the health status of athletes, can be found the intensity and the increased volume of the training effort, psycho-emotional tension, frequent change of climatic zone in which competitions or training camps take place, environmental training factors in sports halls (climatic, mechanical, chemical, biological, etc.) and living (habitual) conditions, including during training camps and competitions (1, 4).

Disorders of the health status of people practicing sport are primarily the consequences of risk factors (both endogenous and exogenous) even less defined by the specific activity performed (3). As a result, the knowledge of risk factors from sport environment is of utmost importance in developing and implementing the primary preventive measures (interventions) of their negative impact on health status, reducing sports morbidity and improving life expectancy (7).

In this context, the aim of the present study is the assessment of the health status of junior athletes practicing basketball and volleyball.

Material and Method

A longitudinal descriptive study has been conducted during the years 2015-2016 on a group of 54 male athletes, aged between 13-17 years, from the Sports Club "Speranta" of Chisinau Municipality, practicing sports games, namely basketball and volleyball. The criteria for enrollment in the research were: males, minimum age 13 years, maximum age 17 years, duration of practicing sport at least 3 years and the written informed consent from each player. The participation in the study was voluntary and free of charge.

The study is part of a research project approved by the Ethics Committee of the Nicolae Testemitanu State University of Medicine and Pharmacy.

Data collection was done by interviewing according to the questionnaire on health status, elaborated in the current study, containing 35 items with multiple choices, control and identification questions.

A Microsoft Access Database was created. Statistical processing was performed by means of variable statistical methods for small random selections. The indices of central values were determined: mean value, standard deviation, standard error and coefficient of variation. The comparison of the results was made by t-student criterion, for the 95% confidence interval. The significance of $p < 0.05$ was considered authentic.

Results

The mean age of junior athletes practicing volleyball and basketball is 16.3 ± 1.45 years and the duration of sport practice is 4.7 ± 0.85 years. There are found statistically significant differences in the duration of the experience of practicing sports games. Thus, in the group of people practicing volleyball, most of the players have an experience of 3 years (38%) and 5 years (30%), while in the group practicing basketball is of 5 years (34%) and 8 years (26%). Most junior athletes (78.3%) are pupils of gymnasiums and theoretical lyceums, followed by college students (18.9%) and students of high schools majoring in sport (2.8%).

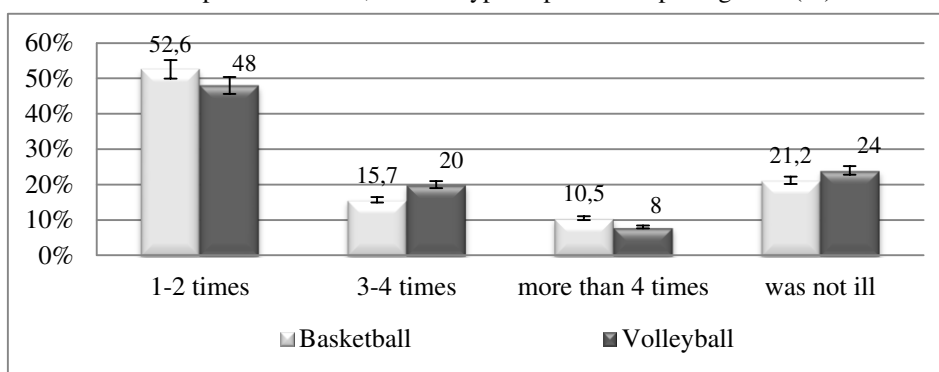
At the time of interview, 72.4% of respondents appreciate their health status as “good”, 24.3% as satisfactory and 3.3% were not able to appreciate it. Proportional registered differences in the analyzed groups are not statistically significant.

Concerning the suffering from chronic diseases, 89.5% of respondents practicing basketball and 92% of those practicing volleyball ($p > 0.05$) reported no chronic diseases. Meanwhile, 10.5% of basketball players and 4% of those practicing volleyball ($p < 0.05$) suffer from chronic diseases. It was found that 4% of volleyball players are not aware of the presence of chronic diseases.

The answers obtained to the questions “How do you assess your health status at the moment?” and “Do you suffer from any chronic disease?” highlight the fact that 2 persons (3.7%) have a careless and irresponsible attitude towards their own health.

Over the past 12 months, about half of the athletes (52.6% and 48.0% of basketball and volleyball players respectively, $p > 0.05$) got sick 1-2 times, and only 22.6% (21.2% of basketball players and 24% of those practicing volleyball accordingly, $p > 0.05$) never got sick (Figure 1).

Figure 1. Distribution of respondents depending on the frequency of illnesses for the past 12 months, and the type of practiced sports games (%)



The illnesses rate was higher in winter, registering similar values in both groups - 56% and 57.8% respectively at volleyball and basketball players ($p > 0.05$). The frequency of illnesses in the autumn months is lower when compared to the winter months, but the levels observed are rated as being high - 36% in volleyball players and 26.5% in basketball players ($p > 0.05$).

To the question “Where athletes usually receive medical care?” most respondents and namely 79% of basketball players and 72% of those practicing volleyball (< 0.05) mentioned the Family Physicians Center from the sector of residence, 15.7% of basketball players and 8% of volleyball players ($p < 0.05$) mentioned

the first-aid post from the educational institution. At the National Center for Sports Medicine "Atletmed" addressed only 4% of the athletes practicing volleyball.

It is worth mentioning that 16% of athletes practicing volleyball and 5.3% of those practicing basketball addressed for medical care to other medical institutions (private medical centers, hospitals, etc.).

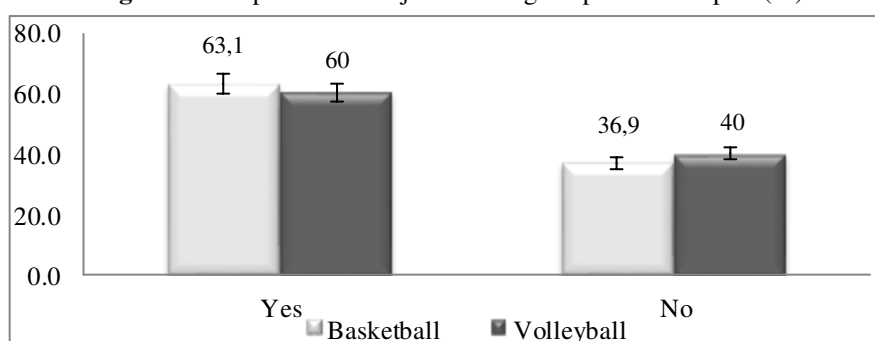
Issues related to oral hygiene, inclusively in junior athletes, is a sensitive subject that requires extra attention, because in association with other factors they may adversely affect the health.

The attitude toward dental health was assessed in compliance with the answers to the question "When did you last visit the dentist". The general recommendation of good practice was taken as a criterion of assessment - a visit every 6 months. It was found that most respondents were consulted by the dentist 12 months ago - 30.1% and 28.4% of athletes practicing basketball and respectively volleyball more than a year ago - 15% of basketball and 30.3% of volleyball players ($p < 0.05$). The proportion of respondents who visited a dentist in the last 6 months is 27.5% and 20.5% ($p < 0.05$) between the athletes practicing basketball and those practicing volleyball.

Another question in the questionnaire was "Have you ever used any medicinal preparations without doctor's consultation?" It was found that 56.8% of athletes from both groups take medications without doctor's prescription which attest the uncontrolled access to medicinal preparations (sale of medicinal products without prescriptions) on the one hand and the lack of medical staff in sports centers and team sports physician, which the athlete may consult, on the other hand.

Sports activity, carried out in fighting conditions to achieve the best performance, can generate a variety of injuries. In the present research it was found the existence of injuries that have caused absences from training and competitions in a proportion of 60% of respondents practicing volleyball and 63% of those practicing basketball ($p > 0.05$) (Figure 2).

Figure 2. The presence of injuries during the practice of sport (%)

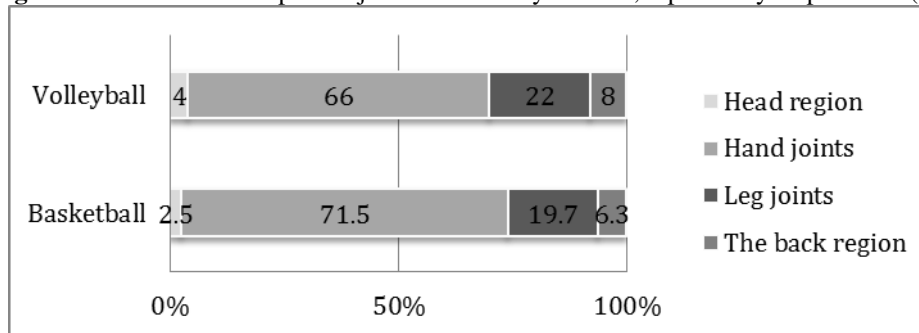


The severity of injuries during competitions or training is not determined by the injuries caused, but by the fact that the injured athletes are forced to give up the competitive activity for a long time, for a full recovery. Injuries, most commonly, are caused accidentally during sports activities, and their location is determined by the specificity of the practiced sport.

The literature reports show that more than half of injuries in volleyball players are represented by ankle sprains (that occur when a player steps on the other), and in basketball - injuries of the fingers, followed by injuries of knees, shoulders, arms in volleyball and injuries of knees, thigh muscles, upper facial injuries and even fractures in basketball (8,13).

These findings are confirmed by the results obtained in the current research. Thus, the young athletes practicing volleyball, 66% of injuries were located in hand joints, 22% - in leg joints, 8% - in the back and 4% - in region of head. In basketball players, the highest rate also consist of the injuries of hand joints - 71.5% and of the leg joints - 19.7%, followed by injuries of the region of back - 6.3% and region of head - 2.5% (Figure 3). Recorded differences are statistically authentic ($p < 0.05$).

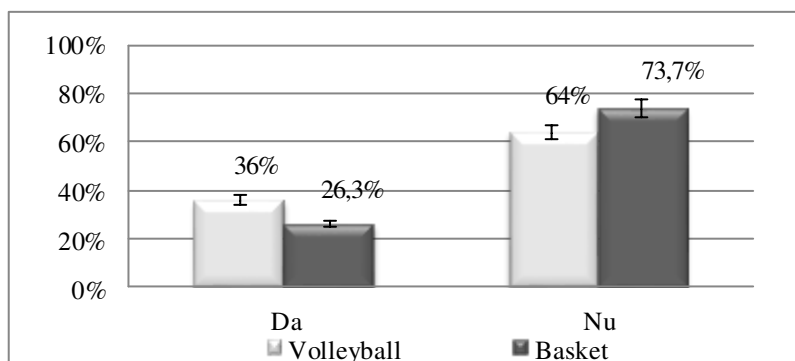
Figure 3. Localization of sports injuries suffered by athletes, reported by respondents (%)



It should be noted that 31.6% of basketball players and 48.0% of the athletes practicing volleyball reported the presence of various skin lesions. According to the specialty literature, skin diseases have a direct causality with inappropriate maintenance of sports halls, failure to comply with hygiene requirements relating to sports equipment and failure to comply with personal hygiene by athletes.

The studies made by Turcan, et al. (2016) showed the presence of specific disorders in adolescents of the visual organ and its annexes such as lacrimation and worsening of the ability to see in the distance, the feeling of exhaustion and tiredness after working at the computer (9). It is undeniable that eye health problems involve difficulties in carrying out sports activities. Thus, the presence of abnormal vision or other eye problems can affect athletic skills and performance. In our case, 36% of the athletes practicing volleyball and 26.3% of basketball players accused abnormal vision (Figure 4).

Figure 4. The presence of abnormal vision or other eye problems, reported by respondents (%)



Sleeping is essential for the good functioning and recovery of the body. The lack of sleeping or the shortening of its duration for various reasons is felt immediately in the loss of daily performance. Long-term effects on health status can be devastating. For these reasons sleeping-related issues and athletic performance are widely studied by researchers (10).

In our case, to the question “*Have you noticed any problems with sleeping disorders*”, 21.6% - 24% of volleyball and basketball players, correspondingly, mentioned the presence of certain disorders before competitions, most commonly under the form of insomnia, which demonstrates tiredness. At the same time, that 15.8% of the athletes practicing basketball and 8% of volleyball players ($p < 0.05$) reported the time spent asleep from 4 to 6 hours, an insufficient duration to restore the functional changes of the body occurring during the activity, including the sports and obviously to maintain and develop a good health status.

Another subject of the questionnaire referred to the evaluation of the wish/motivation to attend training. The majority of respondents - 86.8% said that they are looking forward to the next training.

An optimistic thinking about future athletic career involves mainly a positive attitude, based on hope, trust and faith. Having always confidence in the success of an action or another without losing the common sense,

knowing to turn a defeat into victory, knowing to lose when you're defeated, all these are part of an optimistic thinking. The obtained results denote the full agreement on the optimism and future performance in equal proportions in both studied groups (52% volleyball players, 53% basketball players) neutral position - 16% and 21.1% volleyball and basketball players respectively. Approximately one third of young athletes under observation mentioned the lack of optimism for the future.

Sports activity, most commonly, it is associated with muscle pains. The presence of this symptom has been found by 32% of volleyball players and 42.1% of those practicing basketball ($p < 0.05$).

The tiredness is indispensable to sports activity both during training and especially during competitions when the physical effort is made at the maximum limits of the work capacity of the body, and functional changes in the body of athlete are not restored in the period between training/competitions. Physical overload, in combination with shortened sleeping and psycho-emotional strain induces the development of chronic tiredness (overstrain), which necessarily entails the limitation of the training program, modification of the daily regime of the athlete and even medication. The main complaints mentioned by athletes, denoting the presence of tiredness are shown in Table 1.

Table 1. The complaints of athletes present at the time of the interview (%)

Complaints	Volleyball	Basketball
Moodiness/feeling tired	52	57,8
Reduced physical activity	53,2	64,3
Joint pain	28	21,3
General pain	12,0	10,5
Sleeplessness	4,0	5,2
Irritability	4,0	5,2

It should be noted that an expressed level of reduction of the activity capacity was noted by 15.8% of basketball players and 8% among volleyball players, and an insignificant level of 10.5% by basketball players and 32 % of those practicing volleyball ($p < 0.05$).

The presence of signs of overstrain (sleeplessness and irritability) were reported in equal proportions in volleyball and basketball players.

For athletes practicing volleyball and basketball the motivation and focus capacity are particularly important. Among questioned athletes, 5.2% of basketball players and 4.0% of volleyball players have reported a decrease of the capacity of concentration. An insignificant decrease of the capacity of concentration is mentioned by 21.2% of athletes practicing basketball and by 40% of those practicing volleyball. Most athletes (73.6% of basketball players and 56% of volleyball players) did not notice any decrease of the capacity of concentration.

Discussions

Preservation and promotion of health among young athletes is of particular importance, because physical efforts and psychological characteristic for junior athletes on the background of growth and development processes of the body, combined with activities in educational institutions are risk factors in the occurrence of disorders in their health status (11, 12). It is known that in case of physical, emotional and mental overloads occurs the reduction of the young body resistance to some diseases. In this context, the correct and rational organization of trainings, sports halls, appropriate sports inventory etc. are mandatory conditions.

Despite the efforts to create appropriate conditions for training/competitions, injuries and various affections in athletes are not a rarity, especially in team sports.

The research conducted by Bastos F.N. (2014) showed the existence of specific peculiarities of injury and sicknesses among the athletes practicing sports games (13). Among the so-called "professional disorders" in the health status of basketball players, a significant place is occupied by chronic diseases and osteoarticular system diseases. Injuries to the upper and lower limbs, including ligaments stretching, contusions, particularly of knee and ankle joints are characteristic for them. Up to 80% of all injuries among players are on the account of injuries to their fingers and meniscus injuries and Achilles tendon (14).

Young basketball players have at least one injury during the year. The severity of injuries in basketball is distributed as follows: minor injuries - 58.4% of cases, moderate injuries - 38.2% of cases and serious

injuries -13.4% of cases. About 80% of athletes return to sports activity after injuries. The increase in the number of injuries among junior athletes is caused primarily by the exercise of increased efforts against the background of psycho-emotional overloads and secondly by the implementation of training methods used in adults (8).

According to the author Chainikov P.N. (2016) in the morbidity structure of junior athletes practicing volleyball the diseases of osteoarticular, circulatory and central nervous system are the most widespread ones (15). Our previous researches showed that the practice of sports games, especially basketball and volleyball, causes functional changes at the level of all organs and body systems, expressed more in the circulatory and neuromuscular systems, including in junior athletes (16, 17).

The increased interest of athletes in sports results and the longevity of sporting life requires a systemic approach towards the health status and the reset of visions in respect of sports health insurance and the quality of sports medicine service provided at all levels (11,18).

In some cases overtraining symptoms appear to athletes when the training volume and intensity are beyond the recovery capacity, often combined with the influence of other factors. The etiology of overtraining may be different to various people, which requires knowledge of a wide range of parameters, methods of its determination, and effective recovery methods after effort (19, 20).

The implementation of some effective sanitation programs of the environment and of the training/competition process helps to maintain a good health status, to increase sporting longevity, allows the athletes to prevent injury and to reduce the costs of treatment and subsequent rehabilitation of athletes. By implementing prevention programs of injuries it is also improved the potential of athletes' performance, thing that the coaches also must be aware of and which must motivate them to apply strategies for preventing injuries in athletes.

Conclusions

Sports activity of young athletes is associated with the development of tiredness, including chronic tiredness, denoting an overtraining in more than half of questioned respondents and imposes the urgent need to intervene with organizational measures in the daily regime and trainings.

Injuries in athletes practicing volleyball and basketball are most frequently registered in hand joints and leg joints. Skin diseases are registered at a sufficient high level and denote deficiencies in the proper maintenance of equipment and sports halls, as well as gaps in the personal hygiene of young athletes.

It is necessary a rigorous monitoring of the athletes health status, by carrying out regular medical examinations for early detection of adverse functional changes, disease prevention and health promotion. In the result it would be also obtained the increase of young athletes' responsibility for their own health.

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