Prevention and treatment of injuries sustained in combat sports by adolescents aged 15-16

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Abstract

Background & Study Aim: In combat sports (martial arts), numerous competitors with short training experience are injured relatively quickly. Such injuries, improperly treated or not treated, turn into a persistent, chronic condition. The goal of this study was the knowledge about on prevention and treatment methods for martial arts practitioners.

Material & Methods: The study enrolled 101 martial arts practitioners aged 15-16; 51 of which were female and 50 of which were male. The study was conducted using a questionnaire consisting of 22 questions that was drawn up specifically to meet its goals.

Results: The most of respondents (43 sufficient, 36 good, 13 very good) assess their current state of knowledge about prevention. The largest group of individuals was composed of those that employ both warm-up and stretching in their training units. Many respondents sustained injuries during their career (n = 90 and 11 declared “no”), the most common: soft tissue bruises 39.8%; joint sprain (ankle, elbow, etc.) 26%; joint sprain (ankle, elbow, etc.); 10.4% and below ten percent: complete or partial tear of ligaments and tendons 8.2%; bone fracture 7.3%; head injury 5.2%; spine injury 3.1%.

Conclusions: The majority of individuals who start training combat sports are not aware of the risk associated with them. The majority of individuals who start training combat sports are not aware of the risk associated with them. Despite very good access to information about prevention and how to avoid injury, 90% of the respondents sustained an injury while training. This proves that preventative measures are insufficient.

Keywords: kinesiotherapy • physiotherapy • training units • trauma

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INTRODUCTION

Combat sports develop strength and speed, and are based on mixed exertion of varying intensity. Athletes undergo a thorough training that is focused on: aerobic fitness, strength, endurance, balance, muscle flexibility, speed and agility. An important element of the above-mentioned training is also work on the explosive force. Combat sports are nowadays gaining more and more popularity among all age groups. Competition and direct confrontation with the competitor are probably some of many reasons for the popularity of martial arts [1]. Unfortunately, beginners often do not have sufficient theoretical knowledge and baseline physical fitness to acquire the skills they are provided with in a comprehensive and safe manner. Therefore, numerous competitors with short training experience are injured relatively quickly. Such injuries, improperly treated or not treated, turn into a persistent, chronic condition.

An injury (physical trauma) is an action of any mechanical, thermal or other factor on human body, which results in bodily injury at the cellular, tissue and organ level. Damage caused by injury or injury is divided by type, location, or degree of lesions. Injury division by type, location, or degree of lesions is divided by type, location, or degree of lesions. Injury (physical trauma) is an action of any mechanical, thermal or other factor on human body, which results in bodily injury at the cellular, tissue and organ level. Damage caused by injury or injury is divided by type, location, or degree of lesions. Division by type of injury in martial arts practitioners reveals the following most common injuries: sprains, bruises, muscle or tendon damage, fractures, dislocations. Injuries can also be divided by their cause. Here we can distinguish between intentional ones, namely caused by aggressive or self-defence force, and unintentional ones, i.e. rapid and related to overload, or typical accidental. The main causes of injuries are believed to be as follows: overtraining, excessive overload of bone and muscle system, insufficient preparation of an athlete for competitions in technical terms, ambition of a competitor and coach to take part in competition regardless of health, e.g. due to unresolved injury, material, technical or organisational deficiencies, doping agents, dissimilation, methodical deficiencies [2-17].

From the perspective of sports medicine, rapid diagnosis and rehabilitation constitute important elements of treatment of injuries sustained during combat sports. The following diagnostic imaging methods are used to diagnose musculoskeletal injuries: arthroscopy, arthrography, magnetic resonance imaging, computed tomography and ultrasound. Physical therapy is a part of medical rehabilitation. It may be divided into three elementary elements, such as: kinesiotherapy, physiotherapy and therapeutic massage. The rehabilitation process needs to be carefully planned in order to be efficient. A team of specialists is the basis of a proper and effective rehabilitation plan. It is composed of: an attending physician, physiotherapist, sometimes a sports psychologist (or other specialists needed) who work closely together. According to rehabilitation model employed in Poland, the process should be comprehensive and continuous, which is very important in case of athletes who often start training before they regain full physical fitness [18-25].
The goal of this study was the knowledge about prevention and treatment methods for martial arts practitioners.

MATERIAL AND METHODS

The study enrolled 101 participants; 51 of which were female and 50 of which were male. All participants (aged 15-16) train various combat sports or martial arts: boxing n = 21; karate kyokushin n = 15; MMM (see glossary) n = 15; judo n = 12; karate shotokan n = 11; muay thai n = 10; kickboxing n = 8; Brazilian jiu-jitsu n = 5; taekwondo ITF n = 3; wing tsun n = 1. Training experience from 2 to 4 years dominates among athletes (39.6%) and only 10.89% have practiced martial arts for more than 6 years (Figure 1).

Martial arts practitioners were asked to take part in the survey. A questionnaire was developed for this purpose. It consists of 22 questions, both single and multiple choice. Analysis of data collected makes it possible to verify the state of knowledge about prevention and treatment of injuries sustained by martial arts practitioners.

![Figure 2. Number of training sessions undertaken by the respondents per week.](image)

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![Figure 3. Structure of respondents’ answers to the question: How do you assess your current knowledge about injuries that could occur during training?](image)

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RESULTS

Two largest groups (74% athletes) consisted of individuals who trained 2-3 times per week (Figure 2). The majority of respondents (n = 65, it means 64.36%) failed to interest for information about prevention and treatment of injuries that could occur in given discipline before the first training session. In most cases (n = 64, it means 63.37%), respondents were instructed by their coach about possible injuries and how to protect themselves against them.

The majority of respondents assess their current state of knowledge in the field of injuries they are at risk of during training as satisfactory, and 18 (17.82%) as unsatisfactory (Figure 3). The majority of respondents rated their health as very good or good before starting to train (Figure 4).

The most of respondents (43 sufficient, 36 good, 13 very good) assess their current state of knowledge about prevention (Figure 5). The largest group of individuals was composed of those that employ both warm-up and stretching in their training units (Figure 6). Many respondents sustained injuries during their career (n = 90 and 11 declared “no”), the most common: soft tissue bruises 39.8%; joint sprain (ankle, elbow, etc.) 26%; joint sprain (ankle, elbow, etc.) 10.4% and below ten percent: complete or partial tear of ligaments and tendons 8.2%; bone fracture 7.3%; head injury 5.2%; spine injury 3.1%.

![Figure 4. Structure of respondents’ answers to the question: How would you assess your general health status before the first training?](image)

![Figure 5. Structure of respondents’ answers to the question: How do you assess your current knowledge about prevention in sport you are training?](image)
The structure of prevention is declared as follows: sauna 23.8%; physical therapy 14.3%; massages + sauna 11.4%; massages 9.5%; physical therapy + massages 5.8%; wellness 4.8%; physical therapy + massages + sauna 1.9%; physical therapy + massages + wellness 1.9% and I do not use any 2.9%.

The question Have you consulted your injury with general practitioner, neurologist, orthopaedist or physiotherapist? 72 answered “yes”, 20 “no” and 9 none; while to question Did you start treating your injury after it was diagnosed? the distribution of the answers is as follows: 76 answered “yes”, 14 “no” and 11 none.

Among the declared therapeutic procedures dominates physical therapy + kinesiotherapy (14.3%), physical therapy (13.1%), physical therapy + manual therapy (12.1%) and pharmacological therapy (10.7%) (Figure 7).

The dominant period of treatment was 14 days (32 martial arts athletes declared), while 19 declared up to 7 days, 18- up to 21 days, 15- longer than 21 days and 11- longer than 6 months. Most martial arts athletes (n = 61) adhered to doctor’s orders after medical consultation.

Structure of respondents’ answers to the question How long did your treatment last? is as follows (ordinal variable from the most numerous declared responses): 21 up to 21 days and 21 longer than 21 days; 20 up to 14 days; 19 up to 7 days; 11 longer than 6 months. For 42 athletes, the injury had no effect on their mental state, while for 33 the impact was negative (demotivating) and for 19 motivating. To the question Have you regained complete mental and physical fitness after treatment? 85 athletes answered “yes” and 5 answered “no”.

Seventy athletes decided to expand their knowledge in the field of prophylaxis and motor preparation for training after suffering an injury, while 20 did not. However, 68 athletes declared, that added prevention elements to your training after sustain an injury (wellness, rehabilitation, etc.) but 33 claims that such modification did not affect the number of injuries. Seventy-eight athletes decided to add warm-up and stretching to your training unit after sustained an injury, while 12 did not. To question What happened if you have introduced wellness between your training sessions after recovery? 82 athletes answered “It had no impact on the number of subsequent injuries” and 19 “the number of subsequent injuries significantly reduced”.

**DISCUSSION**

Analysis of results revealed that individuals who plan to start regular training of martial arts are mostly unaware of the risk they will be exposed to. Combat sports are high-risk trauma disciplines. Beginners are not aware of the risk associated with regular overloads, which is why they approach...
the accompanying tasks too hastily. Although the study shows that prevention and recovery between training sessions do not have a significant impact on incidence of injuries, knowledge and awareness of one’s own body and appropriate training plan, which includes warming up and stretching, significantly translates into reduced incidence of injuries in the future. Information on prevention and initial preparation before training also do not have a significant impact on reducing the risk of injury. It may be concluded that injuries and traumas are unavoidable.

Study results may be presented as follows: lack of preparation before training, lack of prevention, lack of recovery between training sessions results in a less intensive training, which may lead to injuries. However, prevention and recovery between training sessions make it possible to have a more intensive training and achieve better results during a sparring match, which may also to injuries. Thus, injuries and traumas are an integral part of sport. Knowledge of respondents acquired after they sustain injury makes them less susceptible to subsequent injuries because they employ appropriate warm-up and stretching exercises.

Figure 7. Therapeutic procedures.

However, injuries are unavoidable [26-28]. On the other hand professional athletes often have knowledge about their body and are supported by a coach, physiotherapist, physician, etc. Individuals who practice martial arts non-professionally, despite lower training loads, in most cases do not have such support and that is why they sustain injuries as frequently.

The study shows that individuals describing their state of knowledge about prevention in practiced sport as good and very good pay more attention to include warm-up and stretching in their training. This is an example of how theoretical knowledge is directly translated into safety during the training process. Sauna is the most popular wellness treatment used to prevent overloads. Its popularity results from its availability and affordable price.

Soft tissue bruises are the most common injuries sustained by the participants. Most respondents show a clear tendency to downplay this type of injury, because only 3 out of 36 individuals who sustained such injury decided to consult a physician. Physical therapy treatments are commonly used during rehabilitation. This is due to the high
availability of these treatments and their price. Currently, treatments such as phonophoresis, magnetic therapy, interference currents or laser therapy are offered not only by rehabilitation centres but also by spas and wellness centres.

Thirty two of 90 respondents who sustained injuries admitted that their treatment lasted at least 14 days; it should be noted that 11 individuals sustained an injury because of which they had to stop training for over half a year. The survey shows that injuries, associated pain and treatment duration had a significant demotivating effect on the respondents.

The majority of athletes declare that they regained complete fitness after treatment. The rehabilitation process can take more than 6 months in treatment of severe injuries, such as fractures, back injuries or head injuries, but 95% of cases fully recover.

The study revealed that the injured ones paid more attention to issues related to prevention of overloads in the training process. They also more frequently incorporated elements such as stretching and warm-up in their training unit. The study demonstrated also that warm-up and stretching exercises incorporated by the respondents into their training after they sustained injury have a significant impact on the number of injuries in the future. Furthermore, wellness between training sessions does not have a significant impact on the number of subsequent injuries in the respondents who sustained an injury.

Furthermore, 22% of amateurs who are injured do not report to a doctor or physiotherapist. Untreated injuries often result in irreversible, long-term complications, and consequently compensations [29-32]. The study demonstrates that a large number of chronic injuries makes it necessary to treat even minor, in opinion of an athlete, conditions, because they may frequently turn into dangerous complications.

**CONCLUSIONS**

The majority of individuals who start training combat sports are not aware of the risk associated with them. Despite very good access to information about prevention and how to avoid injury, 90% of the respondents sustained an injury while training. This proves that preventive measures are insufficient.

Unfortunately, over 22% of the respondents did not consult a physician after an injury. Undiagnosed injury often results in improper treatment, which may make the symptoms chronic and lead to complications preventing athletes from full recovery.

Although 8% of the respondents declared that their preparation before training was unsatisfactory and the remaining respondents stated it was good and very good, they sustained injuries to a comparable extent. This means that lack of motor preparation for a given discipline does not significantly affect the percentage of injuries in the initial training period.

**REFERENCES**


