

CHARACTERISTICS OF ACUTE AND CHRONIC INJURIES OF MARTIAL ARTS FREE COMBAT ATHLETES: IMPLICATIONS FOR AN EFFECTIVE CURATIVE METHOD

LIFU ZHAN

School of Sports Science, Harbin Normal University, Harbin, 150080, China

ABSTRACT

Purpose: To analyze the characteristics of acute and chronic injuries of martial arts free combat athletes and to identify an effective curative method.

Method: This paper analyzed free combat athletes and coaches in different sports institutes and sports teams based on questionnaires, documentary analysis, experts interview, and effectively categorized the types and causes of injuries of free combat athletes, in order to identify an effective curative method for such injuries. 3200 free combat athletes with injuries were selected from hospital data files from June 2011 to June 2015 for this study. The types of injuries were observed and the causes of injuries and curative methods employed were analyzed.

Results: The injuries of free combat athletes can be categorized into acute injury and chronic injury, and the major cause for such injuries was related to the individuality of each sport and changes in free combat competition rule.

Conclusion: Free combat athlete injuries can be classified as either acute injury or chronic injury. During clinical treatment, one should first analyze the type of injury and select a corresponding curative method, so that the clinical treatment can be more effective.

Keywords: Free Combat Athletes, Combat, Acute Injury, Chronic Injury, Characteristics of Injury, Curative Method.

DOI: 10.19193/0393-6384_2017_3s_208

Received December 30, 2016; Accepted June 20, 2017

Introduction

Martial arts free combat is a competitive sport, wherein two athletes combat unarmed against each other with the attacking modes of “punch”, “wrestling”, and “kick” under certain rules. The training for this sport is a systematic process⁽¹⁻⁷⁾. Free combat would often cause physical injuries to athletes, and severely influence their career and physical health. In addition, free combat injury often causes severe physiological and mental damage to athletes, making them feel mentally painful. Therefore, it is very important to analyze the injury types of free combat athletes and to adopt necessary methods to reduce their injury⁽⁸⁻¹²⁾.

In this paper we analyzed the data of 3200 free combat athletes who suffered injuries from June 2011 to June 2015, through a survey on the types of

their injuries, and sought corresponding control methods to avoid the reoccurrence of similar types of injuries. This would be helpful to the physical health of free combat athletes and to their career development. A representative photo of free combat is shown in Figure 1.



Figure 1: A representative example of free combat in action.

Method

Subjects

Among the 3200 free combat athletes from institutes of sports or sports teams selected from hospital data files (The data from Harbin city of China), 2300 were professional athletes, while the remaining 900 were students majoring in martial arts. All selected athletes were male, of which the oldest one was 31 years old and the youngest one was 17 years old, with a mean age of 25.36 ± 8.36 years. The time (duration) of training ranged from a half year to 8 years, with the mean training time at 3.5 ± 1.2 years.

Survey Methods

Documentary analysis: Through analyzing related medical documents and materials, one can have a grasp of free combat and free combat training, so as to provide a theoretical basis for the point of view of this paper. *Expert interview:* Through interviewing experts in field of free combat injury and listening to valuable suggestions from experts, the survey results could be made more accurate and scientific.

Questionnaires: Through questionnaire survey among free combat athletes and coaches, one can identify the types of injuries of free combat athletes and find out the possible cause of these injuries, based on which corresponding treatment measures can be adopted⁽¹³⁻¹⁷⁾. All 3200 questionnaires were collected, with a valid response rate of 100%. (The questionnaire investigation includes the injury types and causes of Martial Art Free Combat Athletes)

Treatment Methods

Due to the particularity (individuality) of the living and working environment of free combat athletes, medical treatments should be given timely upon the occurrence of acute or chronic injuries. However, often after conventional treatment, athletes cannot be guaranteed enough rest as they may have to continue training or to participate in competitions. Hence, conventional and common treatment measures cannot achieve sound therapeutic effect. To enhance the recovery of free combat athlete and to realize a more optimal treatment plan, galvanopuncture and pharmaceutical massage were utilized in addition to conventional treatment. For galvanopuncture, a common No.28 acupuncture needle was connected with DG-II type therapeutic

apparatus for 15 min and then inserted into acupoints (Quchi, Hand three li, Hegu, Yanglingquan, Xiguan, Yinlingquan, Weizhong, Waist Yangguan, Shenshu, Kunlun) of injured or ached body parts (upper limb, lower limb, lower back), every day or every other day. For pharmaceutical massage, injured parts were massaged with Votatin ointment and safflower oil. According to the properties, location, range and disease course of the local injuries, massage was conducted by the methods of one-finger pushing, pointing, pressing, rubbing, pinching, rolling, and buckling for around 20 min. at each location.

Questionnaire survey

Through questionnaire survey in students and coaches in free combat, one can identify the injury types and seek out the possible cause for free combat injuries, and to adopt corresponding curative measures. In this survey, all questionnaires handed out were collected, with a collection rate of 100%.

Statistical analysis

The research data were analyzed by what statistical methods. All data of this text were verified with SPSS21.0 software package. The enumeration data were expressed in $n(\%)$ and verified by χ^2 value; while the measurement data were expressed in $(\bar{x} \pm s)$ and verified by t . After calculating the data between experiment objects, if $P < 0.05$, then differences between them is of statistical significance) and processed using Microsoft Excel.

Results

Main injury parts of free combat athletes

Through questionnaire survey of students, athletes and coaches in martial arts, it was found that the injury parts were extensively distributed in the head, wrist, face, lower leg and foot, with the face and head being the most injured parts⁽¹⁸⁻²⁵⁾. The X-ray image of an injured wrist of a free combat athlete is shown in Figure 2.

The X-ray image of an injured lower leg of a free combat athlete is shown in Figure 3. The X-ray image of an injured head of a free combat athlete is shown in Figure 4.

Cause of injury of free combat athletes

Injury caused by the characteristics of free combat sport

In martial arts sports, the attack mode includes



Figure 2: X-ray image of the injured wrist of a free combat athlete.



Figure 3: X-ray image of the injured lower leg of a free combat athlete.



Figure 4: X-ray image of the injured head of a free combat athlete.

mainly “punching” and “kicking”. There exist highly uncertain factors in this sport. Attacking body parts represents the major target for scoring. Athletes can perform explosive kicks or wrestling for scoring while obeying the corresponding sport requirements, in order to strive for the final victory. Therefore, there are many uncertain factors in this sport. The free combat sport is featured by many collisions of the lower legs during the defensive process, as some athletes also get used to winning by flexible dodges. Therefore, the frequency of use of the ankle joint is greatly increased, leading to over load on the ankle joint, causing severe injuries. Therefore, the major injury parts are distributed among the wrist, head, face, foot and lower leg.

Injuries caused by the change of free combat competition rule

In the process of free combat competition, the rules of competition have changed quickly. In recent years, the coefficient of difficulty for scoring has been greatly increased, which has not only increased the difficulty of competition but also increased the occurrence rate of injury. The newly released rule greatly increased the occurrence rate of injury, leading to an increased extent of athletes' injury.

Injury caused by great disparity of strength between two athletes

In free combat sport, there may exist too large a strength gap between the two opponents, with the overall level of athletes being very different. Of most injured athletes, the majority of athletes was injured by their poor strength or low level of skills. In practical situations, two athletes with a great disparity in strength may be arranged as opponents due to unreasonable draw lots. This will cause the weaker athlete to be beaten severely by the stronger one, while the stronger one may also suffer an increased risk of injury during the severe beating.

Injury rehabilitation of free combat athletes.

After being injured, free combat athletes should take more rest, timely dietary supplements, and sufficient sleep. In addition, injured athletes often increase the intake of vegetables and fruits, so as to remove the acidic metabolic products generated during heavy exercise.

After injury, some necessary rehabilitation and prevention methods include:

- Increase self-protection consciousness

In the free combat process, the head and the waist are among the most attacked parts. Therefore, free combat athletes should be required to increase their medical monitoring knowledge, not only by accumulated experience in real combat, but also by inspection of their physical conditions regularly. Once injuries or illness are inspected, early treatment should be given. Moreover, prevention measures should be taken, so as to prevent injuries suffered during competition or training from causing serious lifelong impact to athletes.

- Enhance physical training

As free combat athletes are required to perform body movements that cost lots of energy within short periods of time (every 2 minutes), the over-

all physical ability of athlete is generally severely challenged. If the physical reserve of an athlete is insufficient, it will affect the tactical play, impacting the competition scores. Therefore, in addition to regular competition or training, athletes and coaches should place a high priority on physical training, so as to increase their physical reserves to meet the metabolic requirements of free combat.

- Scientific and reasonable arrangement of training intensity

In free combat, fatigue of athletes is a major cause for sport injury. This implies that coaches should reasonably arrange the training intensity and properly master the training time. Coaches should focus on the scientific analysis in free combat sport and arrange training sessions according to the physical conditions of the athletes. Training intensity should be arranged according to the unique condition of each individual athlete, with incremental progress.

- Correct grasp of technical movement of free combat

In regular training, athletes should enhance the practice of technical movements, so as to improve their judging ability in defense and offense, improve attacking ability and attacking accuracy. After a correct grasp of the technical movements of free combat, athletes can reflect the combating style of themselves and timely change their defensive and offensive tactics according to the different opponents, so as to decrease the occurrence rate of injury.

- Strengthen protection of injured parts

After being injured, the rehabilitation of injury can determine the success of their future competition to some degree. Therefore, athletes should practice full preparation exercises before competition, so as to accelerate blood circulation with reduced blood viscosity, enhancing blood flow, which will effectively increase the activity of muscles, organs and emergency response capacities. After free combat competition begins, athletes should get into a groove as quickly as possible, fully playing their skills and tactics while focusing on the protection of their head, knee, hands and feet.

- Focus on injury rehabilitation after training

In the rehabilitation of the whole body, athletes should pay particular attention to physical rehabilitation and nutritional supplements, which can enhance the recovery from physical fatigue and effectively minimize the reoccurrence of injury,

providing a better overall body health for future competition.

Discussion

In general, injuries can be classified as either acute or chronic injuries in free combat sport. These injuries will reduce the judging ability, as well as offensive and defensive abilities of free combat athletes. Therefore, it is necessary to analyze the types of injury as well as the possible causes for injury, so as to identify and implement corresponding effective control measures to prevent and to cure injuries. As injuries can be monitored and be cured more early, the career development of athletes can be enhanced, providing a sound foundation for their overall physical health.

Conclusion

In all, acute and chronic injuries are two major injury types for Sanda athletes. During clinical treatment, the injury type of athletes should be analyzed detailedly. After that, effective and targeted treatment scheme should be taken to maximize the therapeutic effect, promote rehabilitation process and allow injured athletes to have high quality of life. Therefore, analyzing injury type is of critical guiding significance to clinical treatment of Sanda athletes, which should be promoted in practices.

References

- 1) Wei Feng. Investigation of Sports Injury of College Students in Major of Free Combat in Shan'xi Province. *Free Combat(Sport Forum)*, 2013; 21: 75-77.
- 2) Kumar, R., et al. , Expression analysis of ClpB/Hsp100 gene in faba bean (*Vicia faba L.*) plants in response to heat stress. *Saudi Journal of Biological Sciences*, 2016; 23(2): p. 243-247.
- 3) Yang Tianshu. Investigation and Analysis of Student's Sports Injury in Free Combat Course in Hunan University of Science and Technology. *Technological Pioneers*, 2013; 6: 196.
- 4) Gao Wei, Wang Yiqiao, Wang Weifan, Shi Li. The first multiplication atom-bond connectivity index of molecular structures in drugs. *Saudi Pharmaceutical Journal*, 2017; 25(4): 548-555.
- 5) Felhi, S., et al., Anti-microbial screening and cytotoxic activity of aerial part of *Thymelaea hirsuta L.* essential oil growing in south-west Tunisia. *Pakistan Journal Of Pharmaceutical Sciences*, 2017; 30(1): p. 87-91.
- 6) Merve A, Gul O, The genetic profiles of CYP1A1, CYP1A2 and CYP2E1 enzymes as susceptibility factor

- in xenobiotic toxicity in Turkish population. Saudi Pharmaceutical Journal, 2017; 25(2): 294-297.
- 7) Shengbo Ge, Zhenling LIU, Yuzo Furuta, Wanxi Peng. Adsorption characteristics of sulfur solution by acticarbon against drinking-water toxicosis. Saudi Journal of Biological Sciences, 2017; 24(6): 1355-1360
 - 8) Zhou Xiaoqing, Zhang Dongqin, Yu Xin. Sports Injury in Free Combat Specialized Training in Sports Colleges and Prevention Measure. Sports, 2013; 8: 25-26+31.
 - 9) Gao Wei, Wang Yiqiao, Basavanagoud B, Jamil Muhammad Kamran. Characteristics studies of molecular structures in drugs. Saudi Pharmaceutical Journal, 2017. 25(4): 580-586.
 - 10) Wu Gang. Review of Sports Injury Rehabilitation for Free Combat Athletes. Education for Chinese After school, 2012; 13: 152.
 - 11) Peng Wanxi, Ge Shengbo, Liu Zhenling, Furuta Yuzo. Adsorption characteristics of sulfur powder by bamboo charcoal to restrain sulfur allergies. Saudi Journal of Biological Sciences, 2017; 24(1): 103-107.
 - 12) Sversut, R.A., et al., Simultaneous determination of gatifloxacin and prednisolone acetate in ophthalmic formulation using first-order UV derivative spectroscopy. Arabian Journal Of Chemistry, 2017. 10(5): p. 604-610.
 - 13) Ko, E.Y., et al., Effect of different exposed lights on quercetin and quercetin glucoside content in onion (*Allium cepa* L.). Saudi Journal of Biological Sciences, 2015; 22(4): p. 398-403.
 - 14) Qu Shuqun. Investigation and Analysis of College Students' Sport Injury Caused in Optional Course of Free Combat in Changchun City. Intelligence, 2012; 13: 324-325.
 - 15) Zhang Xiaolan, Gong Chengqiu. Investigation of Main Injured Parts of Fre Combat Athletes in Jiangxi Province. Sichuan Sports science, 2015; 9: 28-32.
 - 16) Abu-Taweel, G.M., Effects of perinatal exposure to Zamzam water on the teratological studies of the mice offspring. Saudi Journal of Biological Sciences, 2017; 24(4): 892-900.
 - 17) Awan, K.H., The therapeutic usage of botulinum toxin (Botox) in non-cosmetic head and neck conditions - An evidence based review. Saudi Pharmaceutical Journal, 2017; 25(1): p. 18-24.
 - 18) Mao Jun. Analysis of Injury in Free Combat Sport and Prevention Measure. Sports World Scholarly, 2015; 14: 136-137.
 - 19) Shaman, A.M. and S.R. Kowalski, Hyperphosphatemia Management in Patients with Chronic Kidney Disease. Saudi Pharmaceutical Journal, 2016; 24(4): p. 494-505.
 - 20) Kumar N, Jha A., Temperature excursion management: A novel approach of quality system in pharmaceutical industry. Saudi Pharmaceutical Journal, 2017; 25(2): 176-183.
 - 21) Shengbo Ge, Zhenling LIU, Yuzo Furuta, Wanxi Peng. Characteristics of activated carbon remove sulfur particles against smog. Saudi Journal of Biological Sciences 2017; 24(6): 1370-1374
 - 22) Li Fugang, Tu Linlin, Ji Liu. Investigation of Scientific Research Status of Free Combat Sport. Journal of Chengdu Sport University, 2015; 23: 82-87.
 - 23) Li Ke. Common Sport Injuries in College Free Combat Course Teaching and Prevention Measure. Journal of Liuzhou Vocational & Technical College, 2014; 12: 127-130.
 - 24) Gao Wei, Baig Abdul Qudair, Ali Haidar, Sajjad Wasim, Farahani, Mohammad Reza. Margin based ontology sparse vector learning algorithm and applied in biology science. Saudi Journal of Biological Sciences, 2017; 24(1): 132-138.
 - 25) Fang Shunhui. Research of Cause for Common Injuries in Free Combat Sport and Prevention Measures. Digitization User, 2013; 28: 122-123.

Corresponding author
LIFU ZHAN
zhanlifug@163.com