



Storage and Modeling Research of Yoga Injury Cases by Using Computer Information Technology

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Abstract. This paper analyzes the main factors causing the acute injury in yoga practice using the least squares SVM. Special statistics were made for parts and categories prone to damage in yoga practice. Athlete injury factor of least squares supporting vector machine was used to provide special statistics on the parts and categories in yoga acute injury, which can made us understand the truth and cause of injury to prevent re-injury, consolidate technical skills and promote scientific fitness, accumulate research data for the theoretical exploration of the project. Based on utilizing computer storage and tracking, this paper makes a study of injuries, physical feelings and emotional changes of five yoga practitioners of different ages and experiences, and summarizes the causes of yoga acute physical injury, on the basis of professional theoretical guidance, opinions and suggestions.

Keywords: modeling · storage · computer information technology · yoga · acute physical injury

1 Preface

The exercise risks of yoga is accompanied with exercise benefits of seemingly casual and comfortable rules of the practice, before making an objective assessment of your physical status and the risk of the content practiced, and in the absence of security as a premise, even present professional guidance. Injuries with irreversible consequence occur, sometimes even are serious [5]. According to the paper of College yoga teaching in sports injury research of Wang Xiaoshuang and Zhao Yongxing, injury proportion is as high as 85% under the guidance of professional teachers, which 102 of the 120 students involved in the survey have been injured in yoga teaching [3]. It is mentioned in the paper of Gym yoga who is responsible for fracture of He Chunling that more than 25% loss of the left elbow function constitutes a case of grade 10 disability under professional guidance [4]. The occurrence of acute physical injury is often more sudden. The reasons are complex and the individual injury situation is different. In this paper, parts and categories damaged easily in yoga exercise were carried on the specialized statics. At the same time, simple data files of physical status, ability assessment, and injury history are established for the reference of subsequent researchers.

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Table 1. Basic information of the case

Code\Age\Sex	A\58\F;B\18\F;C\42\F;D\31\F;E\25\F
Interview time	A:2022.03.12\B:2022.03.27 C:2022.04.11\D:2022.04.18 E:2022.04.23
Yoga level	A:begin to learn\B:About 6 months\C:More than a year D:More than 3 years\E:More than 5 years
The injured part	A:Ligament of knee B:hamstring muscle C:Inter-lumbar ligament D:Carpaltendon sheath E:Thigh fascia
Target posture	A:Sleeping hero type B:Monkey type C:Cameltype D:Scorpiondi type E:One leg around the head
degree	A:Level 5\B:Level 7\C:Level 5\D:Level 9\E:Level 9

2 Object and Method

2.1 Object

Respondents were selected in yoga practitioners of different ages, who had suffered acute physical injury and had different exercise qualifications, and were injured under different practice environments. Since more women participate in yoga programs, the visitors selected in this paper were all women. The age range is 18–58 years old. The visit was made voluntarily (Table 1).

2.2 Methods

2.2.1 Case Analysis Method

This paper tracks their physical conditions and exercise degree, and analyzes the injuries, physical and emotional changes after the occurrence of acute physical injury.

2.2.2 Participate in the Observation Method

Through contact and observation with the research subjects, a series of questions such as time, depth and frequency, physical ability, and yoga skills were investigated.

2.2.3 Deep Access Method

Also known as clinical access, it is designed to collect the process of personal specific experience and their motivation and emotional information [6]. The visit time should not be less than 90 min per person, and check, correct and modify with the respondents.

2.2.4 Analysis of Athlete Injury Factors Using the Least Squares SVM

This paper analyzes the main factors causing the acute injury in yoga practice using the least squares SVM. Special statistics were made for parts and categories prone to damage in yoga practice. This method establishes the relationship between yoga practice and acute exercise injury, effectively proposing strategies to prevent injury in yoga training.

3 Results and Analysis

3.1 Data on the Causes of Acute Physical Injury in Yoga Practice

Table 2. Old injuries or fatigue.

Old injuries	A:knee strain and previous arthritis B:No C:strain of lumbar muscles D:tenosynovitis E:ligament inflammation of the left hip
Fatigue	A:No B:30 min Pilates + jog for 20 min C:No D:Yoga for 40 min E:Yoga for 60 min

3.1.1 The Body Has Old Injuries or Fatigue

Table 3. Difficulty and physical ability.

Posture level and Ability and Pressure	A:Level 5,Begin to learn,more B:Level 7,About 6 months,more C:Level 5,More than a year,more D:Level 9,More than 3 years,large E:Level 9,More than 5 years,large
Physical status Physical status	A:Older + old disease B:Legs are less flexible C:old disease D:Shoulder-arm, the core strength is insufficient E:Poor hip flexibility + old disease

Table 4. Preparation of activities and completion process

Warming-up\Correct or not	A:2 Sun salutation\No; B:Running + Pilates\No C:No\No;D:40min yoga\No;E:60min yoga\No
Mode of entrance \Correct or not	A:setting posture\No B:standing posture\No C:kneeling posture\No D:headstand\No E:setting posture\No

3.1.2 The Target Posture Exceeds Its Own Ability and Level

3.1.3 Lack of Targeted Preparation Activities or Adaptive Processes and Steps

Table 5. Characteristics

The scene perception of the injury	A:Small, sharp pain B:pull-sore from muscles\C:A stronger sense of tension accompanied by pain\D:Blunt pain of the whole joint\E:Muscles are strained and painful
The early warning before the injury	A:Joint are tight and resistant\B:Muscles are tight and joint resistance is high\C:The back can't do its own power\D:Left wrist overextension, gravity is unstable\E:Joints firm and the muscles twist
the "barrel effect" of the injured area	A:squat with abnormal sound with slight pain\B:The legs are less flexible\C:lumbar muscle strain\D:peritendinitis\E:The flexibility of the left thigh and hip were poor

3.1.4 Errors or no Practical Adjustments that Were Made During the Practice

Through the in-depth conversation with the interviewees, I learned that the yoga acute physical injury cases in this article have experienced the following processes: Prepare for posture; Enter the target position; Body warning; Continue to practice until the injury (Table 2/Table 4). Yoga practice is about step by step, almost every posture has its own way to enter and exit, in the range of physical ability to explore the right intensity and difficulty, the choice is in the practitioner himself [1]. Respect for the current situation of their own ability to timely compromise and concessions to the body, gently advance the progress of practice, injury can be avoided, but forced or aggressive practice, the risk of injury increases (Table 3).

Table 6. Basic Data (take Ms.D for example)

Age\Sex\Height\Weight	31\female\163cm\56kg
Health condition\Diet and rest\Anamnesis\Practice history\Old injury	Good\Normal\No\More than 3 years\Tenosynovitis recovery is unknown

Table 7. Acute injury data (Ms.D)

Time of injury\Scene\posture	2021.9.20\Home alone\Scorpion di type
Injured part\Warming-up\What happened	Left wrist tendon sheath\ 40 min of yoga exercise\The body shakes greatly, the wrist overextends and turns
Symptom\Cause of injury\Suggest	sharp pain, blocked joint movement, followed by swellingCenter of gravity offset, shoulder and arm and core strength lack + fatigue\Change string style and enhance shoulder-arm stability exercises

3.2 Data on the Characteristics of Acute Physical Injury Occurring in Yoga Practice

It appears from the cases that, Acute injury to yoga can be perceived by the athlete on the spot, and can determine in what situation, which step is hurt. This has to do with the self-perception of yoga practitioners, namely: through various physical responses, including the feelings of slack, tense, pleasant, painful, and so on [2]. To experience the site of the acute injury, and the injured had intuition and fore feeling before the injury (Table 5), physical and psychological unusual reactions. For example: jitter, obstruction, tight, shaking, the pressure increase, tension, worry and so on [6]. These reactions are the signals the body sends on the verge of injury, performance beyond physical endurance (Table 5). Through the analysis of the injury cases, injury is in the weakest place, these places are like a bucket board the shortest plank, water will flow from the shortest plate, the “bucket effect”, that is to say, acute injury in yoga exercise often occurs in the weakest body part [5].

3.3 Case Acute Injury Data Profile

3.4 Athletes’ Injury Factors from the Least Squares SVM Were Used to Analyze Yoga Acute Injury Cases

In this paper, in the establishment progress of the relational model simulation between yoga training and acute physical injury, the factors of its physical injury to athletes should be given full consideration. From the analyses of the reasons behind to produce the results is conducted, and the results with relatively small error are obtained. However, this model does not take into account the complexity of the multiple factors that produce

sports injuries during yoga training. Although many of these factors are analyzed one by one, these analyses lack comparisons. A complete design system needs to take into account the coherence of the system, no matter what happens, there are some ways to follow (Table 6/Table 7). In order to construct the corresponding model, it is necessary to form the relational in the three parts of information collection, information processing and information output. The main model progress is shown in Fig. 1.

It can be seen from Figs. 1 and 2 that a data acquisition end should be built firstly. The main function of this port is to enter the injury factors of the various yoga players investigated who can produce sports injuries in the investigation, including the parts and categories which are likely to cause injuries (Tables 1, 2). A dedicated file is created for each of the athletes. Through artificial intelligence analysis, its own advantages and disadvantages are obtained.

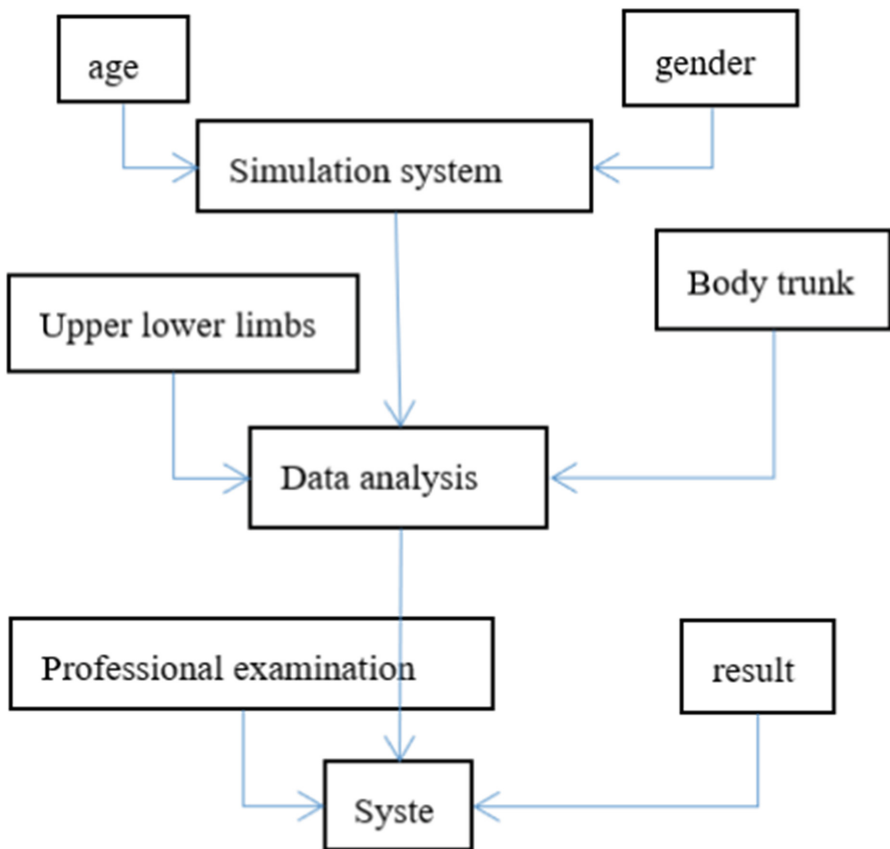


Fig. 1. Preliminary Design of Yoga Training and Acute Injuries

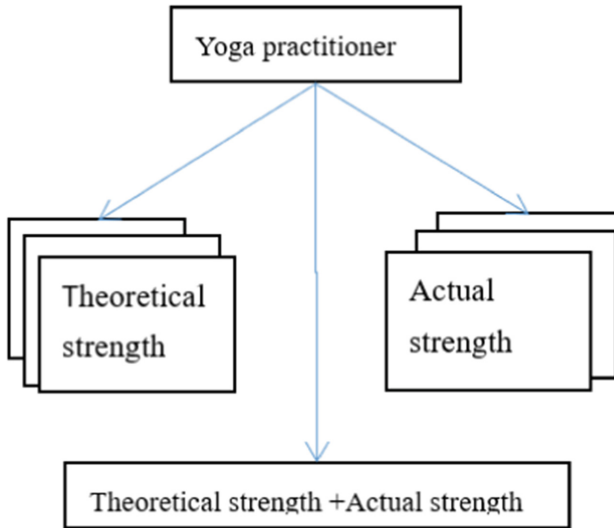


Fig. 2. Overall Flow of The System

4 Conclusion

First of all, the analysis of yoga acute injury factors in least squares SVM is more conducive to tracking and investigating individuals, and is also conducive to improving yoga technology and providing constructive help for this exercise.

Second, this paper puts forward the cause of acute physical injury in yoga, namely: the body of no present illness or fatigue, the target posture above their own ability and level, lack of targeted preparation activities or adaptive processes and steps, through in-depth interview and with participatory, observational records. Also, this paper summarizes the characteristics of yoga acute physical injury: the scene perception of the injury, the early warning before the injury, and the “barrel effect” of the injured area.

Third, it is necessary to prevent re-injury, consolidate technical skills and promote scientific fitness through establishing acute injury data files, understanding the truth and cause of the injury which can accumulate research data for the theoretical exploration of the project.

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