

Study on the Attribution and Preventive Measures of Tennis Elbow among University Students in the Context of Healthy China

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Abstract: In the context of Healthy China, people generally pay attention to and emphasize health issues. The rapid development of tennis is an important part of the national fitness program and the development of higher education sports work in the era of Healthy China. Tennis elbow is a common injury in university students' tennis sports. Based on Hyde's attribution theory, this paper investigates the causes of university students' tennis elbow injuries and illnesses through the literature method, questionnaire survey method, interview method and comparative analysis method, analyzes the main attribution of tennis elbow and the specific attribution and puts forward preventive countermeasures.

Keywords: University Students; Tennis Elbow; Attribution; Preventive Measures.

1. Introduction

In the context of Healthy China, the rapid development of tennis and the increase of university student groups have increased the probability of tennis elbow. Tennis elbow is caused by attributions such as sports behavior habits, ability, expectation, effort, physical and mental condition, coaching level, overload confrontation, etc., which distinguishes it from the group of people who get tennis elbow at the age of 30-65 years old.^{1,2} This paper analyzes the causes of tennis elbow among university students based on Fritz Heider's Attribution Theory, by making a study of internal This paper analyzes the causes of university students' tennis elbow according to Fritz Heider's Attribution Theory, and extracts the factors from internal attribution and external attribution, the internal attribution includes 5 factors of sports behavior habits, ability, expectation, effort, and cognition, and the external attribution includes two factors of the coach's teaching level, and overload confrontation, and the questionnaires are designed around the 7 factors, and preventive measures and suggestions are given according to the results of the survey, so as to provide theoretical support and practical basis for prevention and rehabilitation of university students' tennis elbow.

2. Definition of Tennis Elbow

2.1. The Concept of Tennis Elbow

Tennis elbow, the medical term for epicondylitis of the humerus, is a common disease, the age is mainly concentrated in the 30-65 years old people, clinical symptoms manifested as pain on the outside of the elbow joint, discomfort or jamming phenomenon when brushing teeth, lifting up the arm to eat, and aggravation of the pain when clenching the fist with force, rotating the small arm internally, stretching out the wrist, which leads to the inability to hand-hold objects. A chronic, injurious, aseptic inflammation that occurs at the beginning of the common tendon of the wrist extensor

muscles (Cheng Tingxiu, Qi Yifan, 2024). In the early days, tennis players had more injuries due to overuse of the elbow or irrational technical movements, so this disease is also known as "tennis elbow".

2.2. Research on Tennis Elbow

Low-level tennis players' injuries are mainly distributed in the upper limb area, with shoulder-elbow injuries as the main manifestation (Yan Chen, 2016). Studies have found that tennis elbow can be treated both surgically and non-surgically, and there is no evidence to support that surgery is superior to continued non-surgical treatment and no treatment. New evidence also suggests that the prognosis of tennis elbow is not influenced by the duration of symptoms, and that there is a 50% probability of recovery every three to four months. This finding challenges the belief that failed nonoperative care is an indication for surgery (Karjalainen Teemu, Buchbinder Rachele, 2023). In collegiate tennis injuries, where the tennis elbow is a non-primary site of injury, experimental evidence suggests that surgery may not be effective, but it is based on a small reagent-controlled trial (Ikonen, Joonas MD, &, 2022). Rehabilitation and prevention of tennis elbow in university students has strong theoretical and practical implications.

3. Research Investigation and Analysis

In order to investigate the tennis elbow situation of university tennis players in depth, the overall study population is students who are not majoring in sports in university but have tennis-specific training (NPEM) and students whose sports specialization is tennis (PEM). Based on the minimum sample size at 95% confidence level ($t=1.96$), 20 universities and universities were randomly selected as sampling units according to the university level, and a total of 600 students were randomly selected from the sample in each sampling unit according to equal proportional sampling. The recovered questionnaires were organized and proofread to ensure the authenticity and validity of the data. 573 valid

questionnaires were recovered.

3.1. Basic Information of Students

The basic situation of students is as follows: among the 573 valid questionnaires received, 84 students indicated that they were troubled by tennis elbow injuries, accounting for 14.7% of the overall, in order to have a comprehensive understanding of the attribution of tennis elbow among university students, this study statistically analyzes the 84 students through separate sampling.

3.2. Students' Tennis Elbow Conditions

According to the survey results, there are two main types of students: acute tennis elbow and chronic tennis elbow. As shown in Table 1, there were 8 or 9.5% of acute tennis elbow and 76 or 90.5% of chronic tennis elbow. The probability of patients with chronic tennis elbow was much higher than that of patients with acute tennis elbow. The findings showed that NPEM and PEM among chronic tennis elbow patients conformed to the equiproportionate sampling structure; among acute tennis elbow patients, 7 were NPEM and only 1 was PEM, which did not conform to the equiproportionate sampling structure, and NPEM were more likely to produce acute tennis elbow, which was related to their lack of basic theoretical knowledge of sports.

Table 1. Types of tennis elbow injuries (N=84)

Nature	Acute tennis elbow	Chronic tennis elbow	Total
Number	8	76	84
percentage	9.5	90.5	100

4. Analysis of Attribution of Tennis Elbow among University Students

4.1. Analysis of the Main Attribution of Students' Tennis Elbow

Through the statistics of 84 students' tennis elbow attribution questionnaire, students' main internal attribution survey showed that 8 students' tennis elbow injuries were caused by the wrong performance of sports behavior due to sports migration, mainly badminton and table tennis sports migration, which accounted for 9.5% of the total proportion; 13 students said that poor physical ability could not meet the training needs and thus led to tennis elbow injuries, which accounted for 15.5% of the total proportion; 31 students said that hard training to achieve rapid improvement of tennis skill level and lack of sports recovery led to the formation of chronic tennis elbow, which accounted for 36.9% of the total proportion. The number of students who reported that they trained hard to achieve rapid improvement in tennis skill level and lacked recovery from exercise resulted in chronic tennis elbow, accounting for 36.9% of the total; 3 students reported that tennis elbow injuries occurred due to high expectations, mainly acute tennis elbow, accounting for 3.6% of the total; 5 students reported that they did not know about tennis elbow injuries and did not have any awareness of the injuries at the early stage of the symptoms, and lacked knowledge of tennis elbow injuries, mainly NPEM, which was the main cause of tennis elbow injuries. knowledge, primarily NPEM tennis students, at 5.9% of the total. The survey of students' main external attribution showed that 2 students attributed to the coach's teaching level, which led to their own wrong learning due to the coach's wrong understanding of the technical

movements, accounting for 2.4% of the total proportion; 22 students said that their tennis elbow injuries were caused by the fact that the hitting position was backward than the normal hitting position when hitting the ball for many times due to the overloaded confrontation training, which indicated that the students preferred to play against the players with higher levels than their own, and tended to conceal their own injuries, accounting for 26.2% of the total proportion. their own injuries, accounting for 26.2% of the total percentage, the results are shown in Table 2.

Table 2. Main attribution questionnaire for tennis elbow in university students (N=84)

Factors	Number	percentage
Incorrect performance of motor behavioral habits	8	9.5
Poor physical ability	13	15.5
High expectations	3	3.6
High level of effort	31	36.9
Low cognitive level	5	5.9
Low level of coaching	2	2.4
Overloaded confrontation	22	26.2

After a comparative study, it was found that students' tennis elbow was mainly attributed to high effort, poor physical ability and overloaded confrontation. The findings show that PEM tennis students need to invest more time and energy to improve their tennis professional ability because of their own professional reasons, so they still insist on putting in more effort even though they know the knowledge of tennis elbow, and tennis elbow injuries are mainly chronic and accumulative; while students with poor physical ability are mainly NPEM tennis students, indicating that their physical fitness is unable to satisfy the coaching teaching arrangement, easy to form fatigue and injury, and because of the cognitive level differences, resulting in tennis elbow injuries; overload confrontation practice is the initiative behavior of most students, in order to improve the technical level, in the case of the basic skills are not solid, with the technical level of the students higher than their own confrontation practice, regardless of the rhythm of hitting the ball or the movement load is often beyond the scope of their own ability, which in turn produces tennis elbow injuries.

4.2. Analysis of Students' Tennis Elbow Attributing Factors

Through the investigation of the specific attributing factors of tennis elbow, the frequency of the attributing factors was counted, see the following figure. The highest frequency of attributing factors to students' tennis elbow were effort, ability and expectation, each of which accounted for 75%, 69.1% and 50% of the total number of students, with the number of students being half or more. They believed that they engaged in tennis in the hope of achieving good results (NPEM) or improving their tennis skills to a professional level to meet the employment needs, etc. They said that improving the tennis level could only be done through repeated training, and the correction of technical movements was carried out in the midst of repeated training, and thus the probability of tennis elbow caused by excessive effort was the highest.69.1% of the students believed that they were not competent enough regarding the strength of the tennis-specific physical fitness, Coordination, sensitivity, flexibility and so on cannot meet all, so when practicing tennis, they will use the advantageous

qualities to help, for example, strong arm strength but poor body coordination, when hitting the ball, it will appear to use the arm for power, which is one of the main causes of tennis elbow. 50% of the students said that they have had high expectations, which can be seen in Table 1 that high expectations do not belong to the main attributing factors, but in the specific attributing factors, they appear with high frequency, indicating that most of the students have high

expectations, which means that most of the students have high expectations. The presence of this attribution indicates that most of the students had high expectations, and that in case of discomfort or mild symptoms in the elbow, the students were more willing to overcome the difficulties and continue to strengthen their training because of their high expectations.

Frequency distribution of student-specific attributions (N=84)

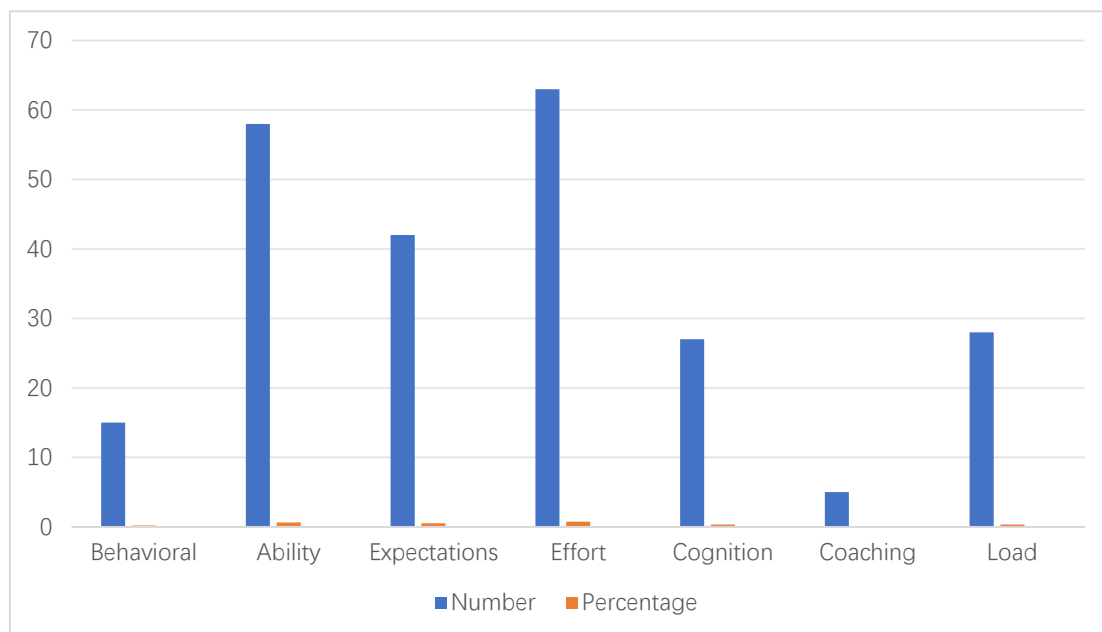


Fig 1. The frequency of the attributing factors

The frequency distribution of specific attribution of students, load 4th, cognition 5th, behavior 6th, and coaching 7th. 33.3% of students indicated that overload confrontation caused injuries focused on the existence of high level of tennis and the existence of grade difference, the rest of the students' competitive level did not vary much, and many students indicated that they felt shy and withdrew by inviting the students with exceptionally high level of competitiveness to play. 32.1% of the students existed tennis elbow injuries Cognitive problems, on the one hand, they were not aware of tennis elbow injuries at all, on the other hand, they were aware of tennis elbow injuries but felt that they were irrelevant. 17.9% of the students indicated that their inherent sports behavioral habits were not easy to change due to sports migration, and the presence of sports migration in badminton and table tennis directly led to tennis elbow injuries, while sports migration in basketball, soccer, volleyball, athletics and martial arts indicated that they also had an impact. Only 5.9% of the students believe that the teaching level of the coach is a factor that leads to their own tennis elbow injuries.

5. Preventive Measures of Tennis Elbow for University Students

According to the current situation of students' tennis injuries and the analysis of tennis elbow attribution, combined with the knowledge of sports training, sports psychology, sports medicine and other disciplines, the following tennis elbow prevention measures are proposed.

5.1. Adhere to the Principle of Gradual and Orderly Progress, and Combine the Degree of Effort with the Ability

Physical ability should be coordinated with the degree of effort. Physical ability and body recovery ability should meet the needs of effort, adhere to the principle of gradual progress, ability and effort progressively. When students are training tennis, they should do the physical quality as the root, and actively participate in tennis training within the body's tolerance, and with the improvement of tennis skill level, they should also strengthen the improvement of physical ability to undertake a higher degree of training to prevent the occurrence of tennis elbow.

5.2. Enhance the Awareness of Self-Protection and Reasonably Deal with Overload Confrontation

Overload confrontation training is an effective way to improve one's tennis skill level. When dealing with overload confrontation training, students should reasonably control the intensity and density of practice according to their own situation, and they can protect themselves from injuries by negotiating, seeking guidance, stopping on their own initiative and shortening the time.

5.3. Learning Tennis Techniques Through Multiple Channels and Developing Good Sports Behavior Habits

The rationality of students' tennis technical movement structure is an effective means to avoid tennis elbow. When

students learn tennis technology, through online and offline multi-channel learning platform, they take the initiative to learn, reflect, feedback and summarize, master the correct tennis technical movements, and develop good sports behavior habits in training, and adjust the movement structure in a timely manner once discomfort occurs, so that they can't keep walking on the wrong road, which will ultimately cause injuries and illnesses that can't be undone.

5.4. Follow the Law of Sports and Establish Correct Expectations

The improvement of sports level is a process of gradual improvement from easy to difficult, from weak to strong, from simple to complex, high expectations are certainly desirable, but need to follow the laws of sports, cannot rush to success, blindly seeking speed, to avoid unrealistic expectations of the results, and negatively guide the degree of effort. Students should be down-to-earth and gradual when facing employment needs and performance goals, and seek a higher level of tennis on the basis of ensuring health.

5.5. Raising Awareness of Tennis Elbow and Combining “Prevention - Recuperation - Treatment”

Theory guides practice, and by improving students' knowledge of tennis elbow, “prevention - recuperation - treatment” is combined. Students should fully learn and master the knowledge of tennis elbow, firstly, make clear the attributing factors of the injury and disease, so that prevention is the main focus; secondly, actively deal with the initial symptoms and recuperate in time; lastly, in the face of non-therapeutic failures or acute tennis elbow, we should give therapeutic interventions to keep away from the trouble of tennis elbow.

6. Conclusion and Recommendation

6.1. Conclusion

(1) University students' tennis elbow is mainly attributed to high effort, overload confrontation and poor physical ability, while the mutual constraints between lack of ability, high expectation and over-effort are the intrinsic factors of tennis elbow injuries, the coaching level of teaching and the influence of sports relocation are the extrinsic factors of tennis elbow injuries, and tennis elbow cognition and overload confrontation are a kind of antagonistic emotion produced by the students in the face of injuries and technical improvement.

(2) The nature of tennis elbow in university students is mainly chronic tennis elbow, which is directly related to tennis sports. In students' tennis sports, improving the

cognitive level of sports injuries and diseases, understanding the causes of tennis elbow, early symptoms and rehabilitation means is the key to preventing tennis elbow, the relationship between coordination ability and effort in tennis training to avoid the generation and transfer of sports injuries and diseases, mastering the correct technical movements of tennis, following the principles of sports, and avoiding over-expectation are effective in preventing the occurrence of tennis elbow.

6.2. Suggestions

(1) University students should analyze their own tennis training, combine the attribution of tennis elbow, arrange training scientifically and reasonably, grasp the main attributing factors, control the specific attributing factors, avoid and prevent the occurrence of tennis elbow injuries and illnesses, realize a healthy life, and promote the health of China.

(2) There is a pathologic significance to the attribution of tennis elbow in students. The studied samples did not carry out pathological interventions, then students suffering from tennis elbow have non-tennis sports nature of the reason, it has living habits, other sports acute injury, bad habits and other factors lead to. That is why it is necessary to be more rigorous in the implementation of specific preventive measures.

(3) Chronic tennis elbow patients in a kind of placebo experiment, the results of surgical and non-surgical treatments are very similar, the symptoms of tennis elbow have a half-life of three to four months, especially for university students' tennis elbow patients targeting mild or initial symptoms, you can relax.

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