Prevention and Healthcare of Common Injuries in Long-Distance Running for College Teachers and Students

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ABSTRACT

In recent years, more and more college teachers and students have started to participate in long-distance running. However, due to differences in physical fitness and exercise levels among participants, unexpected situations are inevitable. Therefore, this article takes some long-distance running teachers and students as the research object to study the situation of lower limb injuries in long-distance running teachers and students and analyzes the frequency and location characteristics of lower limb injuries. Then, a series of simple and feasible lower limb structural assessment and functional tests were conducted on selected long-distance running teachers and students with and without lower limb sports injuries. Research has found that the main types of sports injuries for teachers and students in long-distance running include sprains and strains. The incidence of lower limb sports injuries among long-distance running teachers and students is high, reaching 81.3%, mainly concentrated in the knee, ankle, and foot regions.

KEYWORDS
Colleges and Universities, Healthcare Interventions, Injury Prevention, Long-Distance Running

INTRODUCTION

With the rapid growth of the economy and the improvement of people’s living standards, more and more people have begun to pay attention to their own health, and the sports activities chosen by the public are becoming more and more abundant (Wang, 2021). However, due to the limitations of stadiums, such as venues and environments, many sports programs that rely on the environment and ability of sports are not favored by the public (Alters, 2005).

Because running does not require long-term dependence on the exercise environment and can also reduce cardiovascular disease risk factors and improve cardiopulmonary capacity and weight control, more and more people choose running as a form of exercise (Turris et al., 2014). However, while the number of people choosing the sport of long-distance running is increasing, the skeletal muscle damage of the lower limbs caused by long-distance running is gradually attracting attention.
(Anderson, 2003). Sports injuries that occur during exercise can have a significant impact on the daily lives and teaching of teachers and students. Firstly, it could cause the training plan to be interrupted, making it impossible to continue with long-distance running exercises. Secondly, the damage caused will have an impact on daily classes and travel, making it impossible for students to study and live normally. Finally, recovery could require treatment and a certain cost following an injury, causing certain economic losses. Therefore, a series of similar investigations into injuries occurring during such movements must and urgently be undertaken.

In this study, some long-distance running teachers and students were studied on the lower limb injuries of long-distance running teachers and students, and the frequency and location characteristics of lower limb injuries were analyzed. Then, a series of simple and easy lower limb structure assessment content and functional tests were conducted on selected long-distance runners and students with and without lower limb sports injuries. This article conducts a survey and research on long-distance running teachers and students, aiming to provide reference for long-distance running training in universities.

**INFORMATION RELATED TO LONG-DISTANCE RUNNING**

**Current Situation of Long-Distance Running for College Teachers and Students**

Middle- and long-distance running training is a good form of exercise for the circulatory system involving the legs and limbs. This kind of running training is mainly based on endurance speed as the core of physical fitness, increasing the risk of bone muscle injury (Dick et al., 2013). Compared with professional athletes, ordinary long-distance runners often have problems, such as unscientific training, insufficient physical preparation, weak concept of warm-up and finishing activities, and poor injury protection and rehabilitation conditions (Jelvehag et al., 2016).

Through a review of domestic and foreign literature, this article summarizes detailed information on sports injuries related to long-distance running, including injury incidence, types of injuries, causes of injuries, and suggestions for preventing injuries. W van Mechelen has found through extensive literature that the injury rate of runners is approximately 37%–56%. Irish Journal of Medical Science volume have reported that the probability of injury for young athletes is 40.16%, which is much higher than the 27.42% for older athletes. This could be due to the lack of training experience and self-protection awareness among young athletes. It believes that the human body must repeatedly withstand ground impact forces 1–3 times its own weight during running. Some foreign studies believe that the repeated impact force is a major cause of sports injury, and this high intensity and repetitive stress can cause overwork damage to the human body during running due to impact.

According to the data of Chinese Athletic Association, the number of long-distance running competitions in China is on the rise, and the number of participants is also constantly growing. For example, China’s official marathons attracted about 1.5 million visitors in 2015, an increase of 500,000 from 2014, and increased with over 300 events in 2016 and about 2.8 million visitors. The statistics on the number of marathon events and participants from 2011 to 2016 are shown in Figure 1.

Therefore, people with poor physical fitness are more likely to be injured, and physical exercise function is an important influencing factor of sports injury. For example, people with weaker muscle strength and flexibility may be injured due to excessive stretching or twisting of muscles or joints (Etxebarria et al., 2019). During long-term exercise, university teachers and students often have their lower limbs in high positions and have been injured (Ljungqvist et al., 2009). A series of factors cause sports injuries, often associated with frequent chronic injuries caused by excessive use of muscles and bones (Wenjia, 2020). Researchers have found that injury factors related to jogging include the runner’s personality (body structure and biomechanics) and training methods (Vlahovich et al., 2017).

Assuming that the coordinates of each joint are known, hip \((X_{p0}, Y_{p0})\), knee \((X_D, Y_D)\), ankle \((X_E, Y_E)\), centroid of foot \((X_{p3}, Y_{p3})\), the following formula can be obtained:
This article focuses on long-distance running teachers and students from a certain university, randomly distributing 300 questionnaires, including 200 for males and 100 for females, and collecting statistics. A total of 275 questionnaires were collected, including 263 valid questionnaires, 187 for males and 76 for females.

**Issues to Pay Attention to in Long-Distance Running**

The first is safety. Long-distance running is a high-intensity sport, and participants need to have certain physical fitness and skills. Therefore, when participating in long-distance running, it is necessary to pay attention to safety issues, such as proper warm-up and stretching, correct running posture and breathing patterns, and avoiding excessive fatigue (Weitz, 2016). The second is environmental issues. Long-distance running requires a certain field and environment, such as smooth roads, clean air, sufficient water sources (Devereaux & Lachmann, 1983). Therefore, it is necessary to provide suitable venues and environments for long-distance running activities, such as playgrounds and parks. Then there is the issue of awareness. Long-distance running is a sport that requires perseverance and a strong will, and self-discipline (Huang & Xu, 2022). Therefore, it is necessary to guide participants to establish a correct awareness of exercise, such as insisting on exercise, gradually increasing exercise intensity, and eating reasonably (Kim et al., 2012). Finally, there are issues related to the content of

\[
\begin{align*}
X_D &= X_{p0} + l_1 \sin \theta_1 \\
Y_D &= Y_{p0} - l_1 \cos \theta_1 \\
\theta_1 &= \arctan \left( \frac{X_D - X_{p0}}{Y_{p0} - Y_D} \right)
\end{align*}
\]  

(1)

\[
\begin{align*}
X_E &= X_{p0} + l_1 \sin \theta_1 + l_2 \sin \theta_2 \\
Y_E &= Y_{p0} - l_1 \cos \theta_1 - l_2 \cos \theta_2 \\
\theta_2 &= \arctan \left( \frac{X_E - X_{p0}}{Y_{p0} - Y_E} \right)
\end{align*}
\]  

(2)

\[
\begin{align*}
X_{p3} &= X_{p0} + l_1 \sin \theta_1 + l_2 \sin \theta_2 + l_3 \sin \theta_3 \\
Y_{p3} &= Y_{p0} - l_1 \cos \theta_1 - l_2 \cos \theta_2 - l_3 \cos \theta_3 \\
\theta_3 &= \arctan \left( \frac{X_{p3} - X_{p0}}{Y_{p0} - Y_{p3}} \right)
\end{align*}
\]  

(3)
the event. Long-distance running requires continuous innovation and enrichment of its activity content to attract more people to participate (Lusardi et al., 2012). Combining music, social, and interactive elements can create more interesting and dynamic long-distance running activities. The full score standards for male and female middle- and long-distance running in 2021–2023 are shown in Table 1.

In summary, long-distance running for college teachers and students is a very beneficial form of exercise, which can not only improve physical fitness but also enhance people’s self-discipline and willpower. In order to better develop long-distance running, it is necessary to strengthen publicity, improve the level and safety awareness of participants, and continuously innovate and improve its activity content (Jurcik et al., 2021).

Analysis of Positive and Negative Factors

The positive factors affecting the long-distance running of teachers and students in colleges and universities are as follows:

1. **The support of coaches or mentors**: The support of experienced coaches or mentors can improve the participation and effect of long-distance running (Meyer et al., 2017).
2. **Events and rewards**: Events and rewards can stimulate the enthusiasm and interest of individuals to participate in long-distance running.
3. **Encouragement of school policies**: If the school has a policy to encourage teachers and students to participate in long-distance running sports, this could encourage them to join corresponding long-distance running clubs or activities (Brown et al., 2014).

The negative factors affecting the growth and running exercise of college teachers are as follows:

1. **Time pressure**: College teachers and students usually face heavy learning and teaching tasks, which may cause neglect of physical exercise. It can be difficult to arrange time for long-distance running sports due to time constraints (Bliekendaal et al., 2018).
2. **Health problems**: Some people may not be able to perform long-distance running due to physical discomfort or other health problems, such as heart disease, asthma, joint pain, Severe obesity.
3. **Environmental restrictions**: Some areas within the university campus may not be suitable for long-distance running, such as areas with dense buildings, areas with heavy road traffic, and an excessively winding runway.
4. **Climatic factors**: Harsh climatic conditions such as high temperatures, humidity, and air pollution may also be prohibitive.
5. **Lack of interest**: Some people may not be interested in long-distance running or feel that this exercise is too boring to stick to.
6. **Social pressure**: Some people may be unwilling to perform long-distance running because they are unwilling to show their posture or sports performance in front of others, which may also be a manifestation of social pressure.

Table 1. Full score standard for male and female middle- and long-distance running from 2021 to 2023

<table>
<thead>
<tr>
<th>Project</th>
<th>Required Time for Full Marks (x’ y’**: x Minutes y Seconds)</th>
<th>Score</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>2021</td>
<td>2022</td>
</tr>
<tr>
<td>800 meter (Female)</td>
<td>3’22”</td>
<td>3’14”</td>
</tr>
<tr>
<td>1,000 meter (Male)</td>
<td>3’37”</td>
<td>3’29”</td>
</tr>
</tbody>
</table>
7. **Physical limitations:** Some people may not be able to perform long-distance running exercises due to physical reasons, such as obesity, a body not suitable for long-distance running, poor cardiopulmonary function. (Goossens, 2015).

### Common Long-Distance Running Injuries

#### Types of Injuries in Long-Distance Running

Long-distance running is a high-intensity aerobic exercise, and long-term, high-frequency training can easily lead to sports injuries. The number and ratio of damaged areas can objectively reflect where long-distance runners are prone to injury during long-distance exercise. Corresponding preventive measures can be taken to provide necessary conditions for preventing sports injuries:

1. **Running knees:** Running knees are conditions in which the muscles, ligaments, or cartilage around the knee are damaged or painful during running or other high-intensity exercise. Officially known as “Patellofemoral Pain Syndrome” (PFPS), it usually occurs in front of the knee and is a common sports injury among runners and other athletes. Common symptoms include pain, swelling, stiffness, instability in the knees, and a “creaking” sound in the knees when walking or running (Wang & Sun, 2021). The reason for this is that during running, the lower limbs and feet of the human body continuously complete a series of continuous technical movements, such as pushing, lifting, and touching the ground on different hardness surfaces, enduring various vibration impacts caused by jogging and touching the ground.

2. **Running ankle:** Running ankle is a condition in which the muscles, ligaments, or bones around the ankle are damaged or painful while running. Running ankles are often caused by excessive pressure or twisting on the ankles. They are significantly more likely to be injured when you need to change direction, start, or accelerate frequently during running. Common symptoms of running ankle pain include pain, swelling, stiffness, or fragility around the ankle, and may even bruise or deform the ankle joint.

3. **Hip pain:** Running hip pain occurs during running which is caused by high-frequency, high-intensity exercise and long-distance running training. Common hip pain includes iliotibial band syndrome, hip muscle fatigue, hip muscle sprains, and hip bursitis. Hypothesis: $l_1$ and $l_2$ represent the length of the thigh and lower leg of the lower limb of the human body, respectively; $d_1$, $d_2$, and $d_3$ indicate the position of the corresponding connecting rod center of mass of the leg; $\theta_1$, $\theta_2$, and $\theta_3$ represent the generalized angle coordinates of the corresponding connecting rods, satisfying the right-hand rule; $T_1$, $T_2$, and $T_3$ show the external driving moment applied at the joint; $m_1$, $m_2$, and $m_3$ represent the quality of the linkage; and $p_i$ represents the position coordinates ($i = 1, 2, 3$). However, when the human lower limb does a swing motion, take the $p_o$ at the hip joint as the coordinate origin, and the positive motion mechanical equation:

\[
\begin{align*}
X_{p1} &= X_{p0} + d_1 \sin \theta_1 \\
Y_{p1} &= Y_{p0} - d_1 \cos \theta_1 \\
\end{align*}
\] (4)

\[
\begin{align*}
X_{p2} &= X_{p0} + l_1 \sin \theta_1 + d_2 \sin \theta_2 \\
Y_{p2} &= Y_{p0} - l_1 \cos \theta_1 - d_2 \cos \theta_2 \\
\end{align*}
\] (5)
\[
\begin{align*}
X_{p3} &= X_{p0} + l_1 \sin \theta_1 + l_2 \sin \theta_2 + d_3 \sin \theta_3 \\
Y_{p3} &= Y_{p0} - l_1 \cos \theta_1 - l_2 \cos \theta_2 - d_3 \cos \theta_3
\end{align*}
\] (6)

After deriving the position equation, the velocity equation of each center of mass of the swinging leg can be obtained, which is expressed by the following formula:

\[
V_{p1} = \begin{pmatrix} \dot{X}_{p1} \\ \dot{Y}_{p1} \end{pmatrix} = \begin{pmatrix} d_1 \cos \theta_1 \\ d_1 \sin \theta_1 \end{pmatrix} \dot{\theta}_1
\] (7)

\[
V_{p2} = \begin{pmatrix} \dot{X}_{p2} \\ \dot{Y}_{p2} \end{pmatrix} = \begin{pmatrix} l_1 \cos \theta_1 \\ l_1 \sin \theta_1 \end{pmatrix} \dot{\theta}_1 + \begin{pmatrix} d_2 \cos \theta_2 \\ d_2 \sin \theta_2 \end{pmatrix} \dot{\theta}_2
\] (8)

\[
V_{p3} = \begin{pmatrix} \dot{X}_{p3} \\ \dot{Y}_{p3} \end{pmatrix} = \begin{pmatrix} l_1 \cos \theta_1 \\ l_1 \sin \theta_1 \end{pmatrix} \dot{\theta}_1 + \begin{pmatrix} l_2 \cos \theta_2 \\ l_2 \sin \theta_2 \end{pmatrix} \dot{\theta}_2 + \begin{pmatrix} d_3 \cos \theta_3 \\ d_3 \sin \theta_3 \end{pmatrix} \dot{\theta}_3
\] (9)

4. **Plantar fasciitis:** Plantar fasciitis is a sports-related condition that usually presents with plantar pain. The plantar fascia is a strong ligamentous tissue that connects the heel and toes, which supports the arch and keeps the foot stable. Pain and inflammation occur when the plantar fascia is overused, damaged, or overstretched, and this is plantar fasciitis. Plantar fasciitis is usually caused by overuse of foot muscles and tissues, such as excessive running, prolonged standing, high-intensity training (Sado et al., 2019). The disease is most common in runners and other athletes who engage in impact exercise for long periods of time, but it can also affect other populations, including older adults and overweight people (Simonson et al., 2019).

5. **Muscle strain:** Muscle strain refers to excessive stretching or exertion of muscles during running or other high-intensity sports, resulting in damage to muscle tissue (Savvidou, 2021). This situation usually leads to symptoms such as pain, discomfort, and swelling, which affects athletes’ performance and recovery speed (Dallinga et al., 2019). Common running muscle strains include muscle strains on the back of the thighs, calf muscles, and muscles around the ankle joint. The degree of muscle strain can be divided into mild, moderate, and severe. Minor strains usually only cause mild discomfort and muscle pain, which can be alleviated through methods such as rest and applying a hot compress. Moderate and severe strains may require longer recovery time and may require physical therapy or other medical interventions.

6. **Sympathetic disorders:** Sympathetic disorder refers to an imbalance in the sympathetic nervous system during running or other high-intensity exercise, resulting in an uncoordinated physiological response. The sympathetic nervous system is part of the autonomic nervous system and is responsible for regulating the body’s stress response, including heart rate, blood pressure, breathing, metabolism. When the sympathetic nervous system is out of balance, it can lead to abnormal changes in these physiological indicators, which in turn can lead to physical discomfort or fatigue. Specific symptoms include irregular heart rate, abnormal sweating, gastrointestinal discomfort, fatigue. If sympathetic disorders persist, they can lead to more serious health
problems such as arrhythmias, high blood pressure. Long-term, high-intensity training may lead to sympathetic disorders manifested by rapid heartbeat, sweating, dizziness, and vomiting.

7. **Cardiopulmonary disease:** Long-term, high-intensity long-distance running will put a certain pressure and burden on the cardiopulmonary system, which may lead to cardiopulmonary diseases. You may be at risk for the following cardiopulmonary diseases: myocardial damage, arrhythmias, coronary heart disease, lung infections. However, these risks do not mean that every long-distance runner will develop a heart and lung disease. For healthy people, moderate long-distance running is beneficial, which can improve cardiopulmonary function, strengthen the immune system, but if long-distance running is improper or the runner is in poor physical condition, it may increase the risk of cardiopulmonary diseases.

The most common sports injuries among long-distance runners are joint, muscle, and ligament injuries. This may be closely related to whether the preparation activities of long-distance runners are sufficient, as well as factors such as the strong track and field, which can lead to injuries during training. Secondly, there are other types of injuries, such as contusions and fractures.

**Internal Factors of Long-Distance Running Injuries**

Internal factors include age, gender, menstrual cycle, body temperature, time of injury, conditioned inertia, body shape (BMI), joint stability, balance of muscle strength, and ability to balance the body. Specifically, they include:

1. **Age and gender:** Age and gender also affect the risk of long-distance running injuries. The older you get, the less flexibility and muscular elasticity your body has, so older people are more likely to be injured. Women are also more likely to be injured in certain situations, such as during menstrual periods and pregnancy.

2. **Diet and water intake:** The diet should be healthy and balanced, containing enough protein, carbohydrates, and fat to provide adequate energy and nutrition. During long-distance running, water and electrolytes should be taken in time to maintain the body’s water balance.

3. **There is a history of injury:** Runners with a history of injury have a very high probability of a running injury again. Several studies have found that runners who have a history of sports injuries in their legs within a month or a year are very likely to be reinjured (Dallinga et al., 2019). At the same time, after the injury recovers, the brain also needs more time to adjust to the repaired tissue. If there is no systematic rehabilitation, running directly without waiting for the wound to heal, then the probability of reinjury due to the decline in balance and control will be very large.

4. **Psychological factors:** Psychological factors mainly include lack of concentration, excessive tension, poor self-protection awareness, excessive excitement, low mood, and competitiveness. During the exercise process, the exerciser’s attention may be disrupted by external environment or emotional fluctuations within themselves, and they may not fully devote their energy to the current exercise, leading to the occurrence of sports injuries.

**External Factors of Long-Distance Running Injuries**

External injury factors include technical standards, protective measures, sports shoes, outdoor and weather factors, and technical errors:

1. **Training volume and intensity:** Long-distance running is a high-intensity aerobic exercise. Excessive training volume and intensity increase the risk of sports injuries.

2. **Technique and posture:** The technique and posture of long-distance running also affect the risk of sports injuries. Proper posture can reduce the strain on joints and muscles, reducing the risk of injury. Sometimes runners dare not exert force in order to accommodate the injured part, but
it is easy to let other parts compensate, and the wrong running posture occurs, increasing the risk of injury.

3. **Shoes and ground:** The choice of long-distance running shoes and the hardness and flatness of the ground will also affect the risk of sports injuries. Long-distance running shoes should be comfortable, stable, and have sufficient support and cushioning; choose a flat surface to run and try to avoid running on uneven or obstructed ground.

4. **Weather conditions and outdoor environment:** Weather conditions may also cause long-distance running injuries. If outdoor long-distance running is performed under adverse weather conditions, the probability of causing sports injuries is much higher than the probability of causing injuries under normal conditions.

The above is the analysis of some factors affecting sports injuries in long-distance running. It should be noted that everyone’s physical condition and exercise level are different, so the factors that affect sports injuries may also be different. The definition of prevalence is the number of new injuries within a specific population at a specific time, usually expressed as the number of injuries per 1,000 hours of exercise. In a study, after quantifying three types of injury factors, it was found that the internal injury factors were 53.90%, and the external destruction factors and stimulus factors were 16.40% and 29.70% (Dallinga et al., 2019).

Obviously, the most common injury factor that causes trauma is internal injury, and avoiding internal injury will effectively reduce the risk of injury to athletes. The structural elements of physical activity are joints, flexibility, stability, muscle strength, motor control, coordination, and movement. Compared to previous years, the registration threshold for the 2019 Beijing Marathon has been relaxed, but it has not affected the completion rate. According to statistics, a total of 165,704 runners participated in the forecast for the Beijing Marathon this year, setting a new high in China. Since entering the era of the full marathon, the overall completion rate of the Beijing Marathon has shown a trend of increasing year by year, with an increase of 10 percentage points over the past 5 years. This means that compared to 2015, there were more than 3,000 more runners completing the 2019 Beijing Marathon. The comparison chart of the completion rate of the Beijing Marathon from 2015 to 2019 is shown in Figure 2.

*Figure 2. Comparison of Beijing marathon completion rates from 2015 to 2019*
PREVENTION AND HEALTH CARE INTERVENTION FOR SPORTS INJURIES

Principles of Prevention and Healthcare Interventions

Long-distance running for college teachers and students is a beneficial exercise for physical and mental health, but there are also some common sports injuries. In order to effectively prevent and intervene in common injuries in long-distance running for college teachers and students, it is necessary to start from multiple aspects, including warming up, gradually increasing exercise intensity, selecting sports shoes reasonably, paying attention to rest, strengthening exercise in other parts, conducting rehabilitation training, and maintaining a healthy diet. Therefore, it is necessary to pay attention to the following points:

1. Understand and learn the causes and basic prevention knowledge of sports injuries and strengthen the awareness of preventing sports injuries.
2. Reasonably choose exercise content and arrange exercise load reasonably.
3. Prepare for the activity.
4. Strengthen exercise in vulnerable areas.
5. Avoid chronic strain caused by the accumulation of minor injuries due to excessive local burden.
6. Choose a safe and hygienic sports environment.
7. Strengthen self-medical supervision.

Benefits of Prevention and Healthcare Interventions

Sports injury prevention and interventions have many benefits, such as improving physical fitness, enhancing exercise capacity, reducing the risk of injury, and promoting physical and mental health:

1. Prevention of sports injuries: By taking appropriate preventive measures and health care interventions, the risk of sports injuries can be reduced, thereby avoiding adverse effects, such as pain, discomfort, waste of time and money caused by sports injuries, and protecting the body from injury.
2. Improve physical adaptability: Regular proper exercise and physical exercise can improve the body’s adaptability and endurance so that the body is more able to withstand the exercise load and prevent the occurrence of accidental injuries.
3. Improve physical fitness: Prevention and health care measures help improve physical fitness, including aspects such as muscle strength, balance, flexibility, and endurance, so that the body is healthier and reduces problems, such as pain and fatigue.
4. Promote physical rehabilitation: For people who have already suffered sports injuries, through appropriate rehabilitation training and health care intervention, the recovery of the injured part can be accelerated, pain and discomfort can be reduced, and at the same time, the injury can be prevented from reoccurring.
5. Improve psychological quality: Prevention and health care measures help reduce anxiety and worry about sports injuries, improve people’s psychological quality, and enhance confidence and determination.
6. Enhance exercise capacity: Through prevention and health care measures, it can help people enhance exercise ability, such as improving speed, agility, and coordination, so as to better perform various sports. Therefore, it is very important to carry out sports injury prevention and care interventions, whether for sports enthusiasts or professional athletes.

Measures for Prevention and Healthcare Interventions

Prevention and health care interventions for sports injuries need to pay attention to the following points:
1. **Warm-up and stretching**: Before doing long-distance running, be sure to do sufficient warm-up and stretching. By warming up, athletes can increase their muscle and body temperature, muscle contraction speed, aerobic energy supply capacity, strengthen material metabolism and energy release, and help prevent muscle and joint damage. On the other hand, it can also regulate the psychological state of long-distance runners.

2. **Gradually increase the intensity of exercise**: The intensity of long-distance running exercise should be gradually increased, and do not overwork at the beginning. This allows the body to adapt to the load of exercise and reduces the risk of injury.

3. **Reasonable choice of sports shoes**: Choose sports shoes that suit you, which can reduce the force and pressure during exercise and the risk of injury.

4. **Pay attention to rest**: Adequate rest and recovery after exercise is necessary, do not overwork. If the body feels tired or shows symptoms of discomfort, you should stop exercising and rest in time.

5. **Strengthen the exercise of other parts and improve endurance**: Long-term long-distance running will make the leg muscles overdeveloped and the muscles in other parts relatively weak. For example, strengthen the core muscles, which include the waist and abdominal muscles, which are essential for the stability and balance control of the body. Therefore, the muscles in other parts should be strengthened to maintain the balance of the body. To improve physical fitness and endurance, long-distance running requires a certain amount of physical fitness and endurance support, so you can improve your physical fitness and endurance level through appropriate training and reduce the risk of sports injuries.

6. **Rehabilitation training**: If a sports injury has occurred, rehabilitation training should be carried out in time to strengthen muscle strength and flexibility and gradually restore exercise ability.

7. **Healthy diet**: A reasonable diet can provide the body with sufficient energy and nutrients to promote the recovery and health of the body. Pay attention to water intake; long-distance running can make the body sweat, resulting in the loss of water in the body. Therefore, when exercising, you should pay attention to replenishing water, maintaining the body’s water balance, avoiding problems such as dehydration and heat stroke.

8. **Massage and relax muscles**: Long-term long-distance running will make muscles stiff and tense, which can easily lead to sports injuries. Therefore, massage and training to relax the muscles can be performed to help the muscles relax and recover.

9. **Regular physical examination**: Regular physical examination can detect physical health problems early, timely treatment and intervention, and reduce the risk of sports injuries. Therefore, prevention and health care intervention of common injuries in college teachers’ growth and running sports needs to start from multiple aspects, and only by comprehensively considering these factors can we better protect the body and reduce the occurrence of sports injuries.

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**CONCLUSION**

Through the above research, it can be found that long-distance running has a wide range of injuries to the human body, and all parts of the body have a risk of injury. The injured part is closely related to the specific project that the long-distance running teacher and student are engaged in and is determined by the difference in strength. The types of sports injuries of teachers and students in middle- and long-distance running mainly include sprains and strains. The main areas affected are the ankles, feet, knees, and lower legs. Of course, there are two main types of sports injuries: acute and chronic. The prevalence of lower extremity sports injuries among long-distance runners is high, up to 81.3%, mainly concentrated in the knees, ankles, and feet (Wenjia, 2020). The most common injuries are the iliobibial band friction syndrome and plantar fascia. Of the runners injured, 67.5% were injured more than once (Wenjia, 2020).
Therefore, it is necessary to prevent the common injuries of long-distance running teachers and students in strength training. Different preventive measures should be taken to address the different causes of sports injuries among teachers and students in long-distance running, such as adequate preparation activities and reasonable arrangements for teaching, training, and competitions.

AUTHOR NOTE

Yoram Sorokin, Department of Obstetrics and Gynecology, Wayne State University. The figures used to support the findings of this study are included in the article. The authors declare that they have no conflicts of interest and would like to show sincere thanks to those techniques that have contributed to this research. This work was not supported by any funds.
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