

SITUATION AND PREVENTION STRATEGIES OF SPORTS INJURIES IN COMMUNITY HOME SPORTS UNDER THE BACKGROUND OF COVID-19



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A SITUAÇÃO E ESTRATÉGIAS DE PREVENÇÃO DE LESÕES ESPORTIVAS EM ESPORTES DOMÉSTICOS COMUNITÁRIOS SOB O PANO DE FUNDO DA COVID-19

LA SITUACIÓN Y LAS ESTRATEGIAS DE PREVENCIÓN Y TRATAMIENTO DE LAS LESIONES DEPORTIVAS EN EL HOGAR EN LA COMUNIDAD EN EL CONTEXTO DEL COVID - 19

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ABSTRACT

Introduction: In the context of COVID-19, many physical activities have been restricted to the home environment, including traditional community sports. The situation of bodily injuries and prevention strategies during this period urges investigation and adaptation for a preventive approach. **Objective:** Explore the current scenario by devising means of prevention for sports injuries caused in the home environment. **Methods:** A total of 60 people were selected as experimental volunteers for home sports injury analysis, 30 in the experimental group and 30 in the control group, the cases were studied, and hypotheses were raised corroborating a preventive system of the cataloged home sports injuries, as well as the mitigation of their interurrences. **Results:** In the experimental group, the flexion amplitude increased from 74.55 ± 5.30 to 95.19 ± 6.54 ; the extension amplitude increased from -3.88 ± 3.29 to 1.57 ± 2.17 ; the walking index evolved from 22.61 ± 7.00 to 28.53 ± 5.74 ; the stair activity index increased from 18.70 ± 6.79 to 18.70 ± 6.79 . The same data measured in the control group showed no significant changes. **Conclusion:** Prevention of sports injuries during the current pandemic begins with the care of the immune system; care of the home environment was also described, as well as validation of effective treatment for timely rehabilitation of home sports injuries. **Level of evidence II; Therapeutic studies - investigation of treatment outcomes.**

Keywords: COVID-19; Accidents, Home; Sports Injuries.

RESUMO

Introdução: No contexto da COVID-19, muitas atividades físicas restringiram-se ao ambiente doméstico, incluindo os esportes tradicionalmente comunitários. A situação das lesões corporais e as estratégias de prevenção durante este período urge investigações e adaptações para uma abordagem preventiva. **Objetivo:** Explorar o cenário atual elaborando meios de prevenção para as lesões esportivas ocasionadas em ambiente domiciliar. **Métodos:** Um total de 60 pessoas foram selecionadas como voluntários experimentais para análise de lesão esportiva domiciliar, 30 no grupo experimental e 30 no grupo de controle, estudou-se os casos e foram levantadas hipóteses corroborando para um sistema preventivo das lesões esportivas domiciliares catalogadas, bem como a atenuação de suas intercorrências. **Resultados:** No grupo experimental, a amplitude de flexão aumentou de $74,55 \pm 5,30$ para $95,19 \pm 6,54$; a amplitude de extensão aumentou de $-3,88 \pm 3,29$ para $1,57 \pm 2,17$; o índice de caminhada evoluiu de $22,61 \pm 7,00$ para $28,53 \pm 5,74$; o índice de atividade em escadas aumentou de $18,70 \pm 6,79$ para $18,70 \pm 6,79$. Os mesmos dados aferidos no grupo controle não apresentaram alterações significativas. **Conclusão:** A prevenção de lesões esportivas durante a pandemia atual inicia-se no cuidado do sistema imunológico, cuidados com o ambiente doméstico também foram descritos, bem como a validação de tratamento eficaz para a reabilitação das lesões esportivas domésticas em tempo hábil. **Nível de evidência II; Estudos terapêuticos - investigação dos resultados do tratamento.**

Descritores: COVID-19; Acidentes Domésticos; Lesões do Esporte.

RESUMEN

Introducción: En el contexto del COVID-19, muchas actividades físicas se han restringido al ámbito doméstico, incluidos los deportes comunitarios tradicionales. La situación de las lesiones corporales y las estrategias de prevención durante este período urge investigaciones y adaptaciones para un abordaje preventivo. **Objetivo:** Explorar el escenario actual ideando medios de prevención para las lesiones deportivas causadas en el entorno doméstico. **Métodos:** Un total de 60 personas fueron seleccionadas como voluntarios experimentales para el análisis de las lesiones deportivas domiciliarias, 30 en el grupo experimental y 30 en el grupo control, se estudiaron los casos y se plantearon hipótesis corroborando para un sistema preventivo de las lesiones deportivas domiciliarias catalogadas, así como la mitigación de sus interurrencias. **Resultados:** En el grupo experimental, la amplitud de flexión aumentó de $74,55 \pm 5,30$ a $95,19 \pm 6,54$; la amplitud de extensión aumentó de $-3,88 \pm 3,29$ a $1,57 \pm 2,17$; el índice de marcha evolucionó de $22,61 \pm 7,00$ a $28,53 \pm 5,74$; el índice de actividad en escaleras aumentó de $18,70 \pm 6,79$ a $18,70 \pm 6,79$. Los mismos datos medidos en el grupo de control no mostraron cambios significativos. **Conclusión:** La prevención de las lesiones deportivas durante la pandemia actual comienza en el cuidado del sistema inmunológico, también se describió el



Descriptor: COVID-19; Accidentes Domésticos; Lesiones en Deportes.

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INTRODUCTION

At the end of 2019, a seafood monopoly in Wuhan, Hubei Province, China, suddenly appeared a kind of pneumonia with unknown causes. Its clinical manifestations were high fever, dry cough, dyspnea, mental fatigue, and so on. It was similar to the manifestations of epidemic virus infection.¹ The laboratory test showed the variation of the white blood cell system, which was characterized by a decrease in the number of lymphocytes. Except for young infants, patients were widely susceptible. This kind of pneumonia of unknown etiology has great pathogenicity and infectivity, and can quickly break out in the crowd, causing widespread concern at home and abroad.² In the face of the spread of novel coronavirus, although strict control measures have effectively controlled the transmission of the virus, long-term home isolation has interfered with people's normal life activities, especially for people suffering from various chronic diseases, which will become a huge challenge.³ However, in view of the characteristics of the aggressive pneumonia virus, such as high infectivity, rapid transmission and unclear infection mode, the activities of the general public in the situation of isolation at home have been disturbed to some extent; A large number of false scientific information, uncertain information, news of rumors and viruses, etc., have flooded the entire social network space, and have had a certain impact on people's psychology.⁴ Therefore, people should pay attention to their mental health problems as well as their health care. Mental health education is an important part of the concept of health. Reasonable and effective psychological intervention measures will help citizens overcome psychological diseases, change negative emotions, and improve their quality of life.⁵ At present, COVID-19 infectious disease has not been fundamentally curbed, and patients may not be able to carry out thorough and professional hospital rehabilitation training due to various realities, so home physical exercise will become a new way of physical exercise. For this reason, this paper explores the prevention strategies of home sports injury in the context of the COVID-19.⁶

METHOD

In this paper, 60 people were selected as the experimental subjects of home-based sports. The selected experimental subjects were all at home in a short time under the COVID-19 background, so there was no significant difference in various physical indicators. The study and all the participants were reviewed and approved by Ethics Committee of Mudanjiang Normal University (NO.MDJNU21Z08). The 60 subjects were divided into the experimental group and the control group for comparative analysis. The experimental group and the control group each had 30 people. Both the experimental group and the control group had a four-week exercise injury prevention and exercise injury relief experiment. During the four-week experiment, the 60 subjects still maintained normal work and rest time and normal eating habits.

RESULTS

Sports injuries in community home sports under the background of COVID-19

In the context of COVID-19, we need to rely on ourselves to find a relatively good way to make ourselves feel happy at home. We need a certain amount of guaranteed exercise every day to feel comfortable.

Therefore, Figure 1 shows the benefits of sports at home. Figure 1 selects five tasks as scoring indicators. Among them, the purpose of increasing physical fitness is to promote human growth and development. Its score reached 3.243; The score of keeping happy mood in Figure 1 reached 3.211; In the context of COVID-19, we should pay attention to enhancing immunity, which has a very good effect on the body, so the score of improving immunity is as high as 4.687; Therefore, we must focus on improving immunity, strengthen exercise every day, and improve the symptoms of physical weakness; As we all know, weight loss exercise is the most effective and safe way to lose weight, so it has been loved by women. This exercise can not only make the body reach the exercise goal, but also help you consume excess fat in the body, promote metabolism, and achieve the goal of losing weight through exercise, so the score of losing weight is also high. Reached 4.252; Completing academic tasks is a necessary task, and its score is 2.472.

Therefore, in the context of COVID-19, there are various sports activities used for community and family sports. The purpose of community home sports is to enrich the cultural life of residents, improve the quality of life and improve interpersonal relationships. The purpose of the community home movement can effectively promote people's mental health, control and eliminate all kinds of bad emotions, promote interpersonal communication and enhance mutual understanding.

Figure 2 (a) shows the injury situation of community home sports. The degree of injury is divided into mild injury and moderate injury. Only the first three types of injury are listed, namely knee, ankle and hand. It can be seen that knee injury in mild injury accounts for 52% in the sector chart, ankle injury accounts for 35% in the sector chart, and hand injury accounts for only 13%. It can be seen that the highest degree of body injury is in the knee, accounting for more than half of the sector statistical chart, followed by the ankle injury accounting for 35%, and the last injury is in the hand.

Figure 2 (b) shows the proportion of injuries in community home sports. The degree of injury in Figure 2 (b) is moderate. Only the first three types of injuries are listed, namely knee, ankle and groin. The following is the sector statistical chart of the degree of injury, from which we can know that the knee injury in moderate injury accounts for 64% of the sector statistical chart, the ankle injury accounts for 22% of the sector statistical chart, and the hand injury accounts for only 14%.

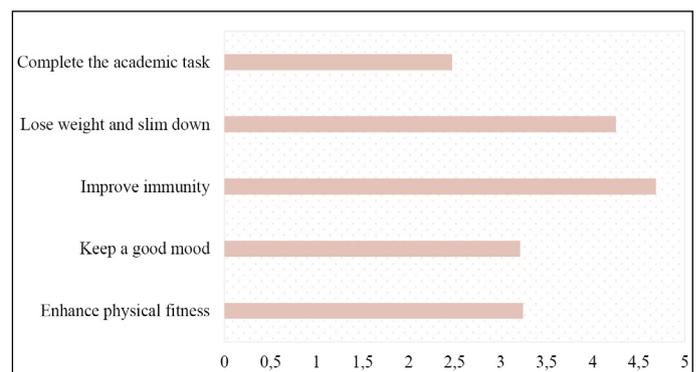


Figure 1. The purpose of community home sports.

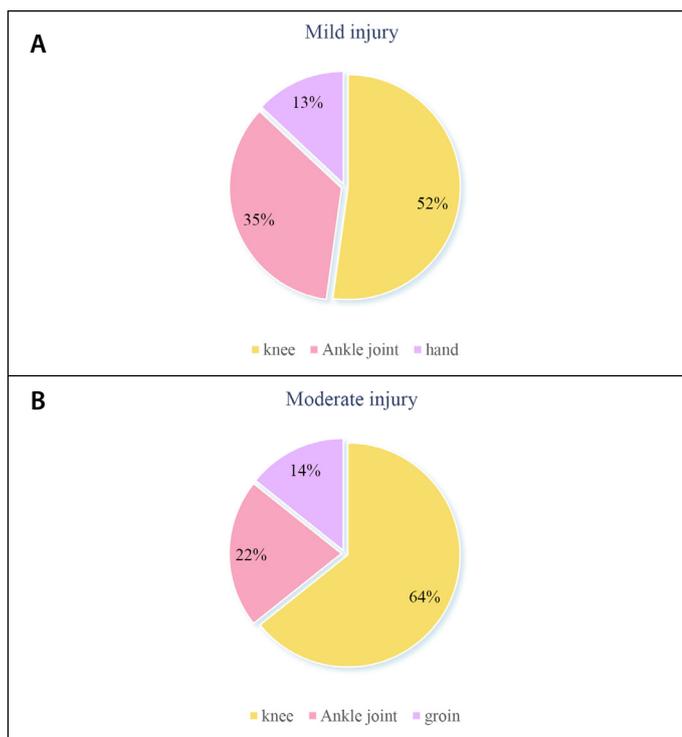


Figure 2. Injuries in community home sports.

It can be seen from Figure 2 (b) that the proportion of ankle joint is 13% lower than that of mild injury, while the proportion of knee injury in moderate injury is 12% higher than that in mild injury, and the proportion of knee injury is 64%. Therefore, the knee injury is the most serious.

Prevention effect of sports injury at home in community under the background of COVID-19

Table 1 shows the experimental data of four weeks, and the change of prevention effect of sports injury at home.

The options of home sports in the experimental group only have significant differences in squat, hurdle, straight lunge, and trunk stable push-up, while the data of other items are not significantly improved. Among them, the P value of straight lunge and trunk stable push-up are the highest, and the P value of active straight leg lift is the lowest. During home sports, the squats, hurdles, straight lunges and trunk stable push-ups of the athletes will be significantly improved. However, it will also lead to a decline in rotational stability and active straight leg lifting. The total score of home-based sports in the experimental group before the experiment was 13.292 ± 2.795 , and the total score data after the experiment was 15.632 ± 1.916 .

Table 2 is the experimental data of the prevention effect of sports injury for four weeks.

According to $P < 0.05$, there is a significant difference. There is a significant difference between the experimental group and the control group in the aspect of active straight leg lifting, and there is no significant difference in the aspect of hurdle step. At the same time, the difference between the experimental group and the control group in straight lunge and trunk stable push-ups is also relatively large. It shows that the prevention effect of sports injury has improved the obvious prevention effect on community home sports, which is mainly reflected in the aspects of straight lunge, active straight leg lift, squat, and trunk stable push up, but not in the aspect of rotation stability.

The total score of home-based sports in the experimental group before the experiment was 13.292 ± 2.795 , and the total score data after the experiment was 13.297 ± 1.509 .

Mitigation effect of sports injury at home in community under the background of COVID-19 -- taking knee joint as an example

Table 3 is the experiment on the effect of the experimental group on alleviating the injury of community home sports before and after the experiment.

The data of the flexion range in the community home sports in the experimental group before and after the experiment have a large difference, and the change is very obvious. The value change of the extension range before and after the test is the smallest. It is worth mentioning that after the injury relief effect, the range of flexion and the ability to climb and descend stairs of the athletes will be improved, while the extension range and walking ability of the project will not significantly alleviate the injury after the sports.

Table 4 shows the effect of the control group on the relief of sports injury at home in the community before and after the experiment.

It is not difficult to see from Table 4 that the improvement of the stretching range and the ability to climb and descend stairs before and

Table 1. Prevention effect of sports injury in community home before and after experiment in experimental group.

Option	Before experiment	After experiment	P value
Squat	1.666±0.751	2.279±0.526	0.0071
Hurdle step	1.768±0.718	2.402±0.506	0.0198
Straight Lunge	2.107±0.715	2.454±0.504	0.0297
Shoulder flexibility	2.610±0.658	2.844±0.339	0.0100
Active straight leg lift	2.610±0.645	2.783±0.424	0.0045
Trunk stable push up	1.090±0.409	1.398±0.494	0.0257
Rotational stability	1.407±0.494	1.489±0.515	0.0072
Total score	13.292±2.795	15.632±1.916	0.0267

Table 2. Prevention effect of sports injury at home in the community before and after the experiment in the control group.

Option	Before experiment	After experiment	P value
Squat	1.626±0.573	1.813±0.506	0.0411
Hurdle step	1.768±0.718	1.658±0.486	0.0312
Straight Lunge	2.107±0.715	1.995±0.504	0.0529
Shoulder flexibility	2.610±0.658	2.844±0.339	0.0340
Active straight leg lift	2.610±0.645	2.534±0.595	0.0552
Trunk stable push up	1.090±0.409	1.185±0.375	0.0592
Rotational stability	1.407±0.494	1.280±0.464	0.0371
Total score	13.292±2.795	13.297±1.509	0.0585

Table 3. Mitigation effect of community sports injury in experimental group before and after the experiment.

Option	Before experiment	After experiment	P value
Buckling range (°)	74.550±5.307	95.195±6.543	0.0104
Extension range (°)	-3.889±3.295	1.576±2.173	0.0159
Walking ability score	22.610±7.009	28.530±5.746	0.0210
Rating of ability to climb and descend stairs	18.700±6.799	24.629±8.908	0.0112

Table 4. Mitigation effect of community sports injury in the control group before and after the experiment.

Option	Before experiment	After experiment	P value
Buckling range (°)	73.270±4.892	81.877±3.711	0.0505
Extension range (°)	-3.097±2.501	2.773±1.483	0.0590
Walking ability score	19.633±4.559	23.519±1.866	0.0443
Rating of ability to climb and descend stairs	17.936±5.599	20.496±6.507	0.0574

after the experiment is not obvious, and the injury of sports should be relieved in time. From the data, it can be seen that the flexion range is the item with the highest data improvement before and after the experiment, which is 73.270 ± 4.892 . At this time, the data after the experiment is higher than 81.877 ± 3.711 of the data before and after the experiment, and the data before and after the stretching range experiment changes very little, and the effect is not ideal.

DISCUSSION

The psychological pressure and negative impact of the epidemic on the people are obvious, so we must give them psychological guidance and decompression in time. Scientific research has confirmed that home exercise is not only the most economical, intuitive and efficient exercise method to reduce psychological stress, but also an effective auxiliary means to prevent and treat depression and anxiety. With the current normalization of epidemic prevention and control, home exercise has become one of the most important exercise methods for the people to exercise, and also the most important form for the people to relieve their psychological burden. The construction of the community sports training supply system for home sports can significantly improve the supply quality of sports services, so as to better address the needs of residents for home sports and promote the release of psychological pressure of residents. To sum up, the normalization of COVID-19's prevention and control has made home sports the preferred form of physical exercise. However, due to the limitations of family space conditions, many traditional physical exercise programs have been unable to be implemented, so it is the most urgent need to explore the content that is more conducive to home sports. The demand for sports venues and equipment is very low for residential sports projects of community residents, so sports can be carried out in the residential environment. In view of the current normalization of epidemic prevention and control,

the establishment of a community home-based sports training and supply system for home-based sports can increase the effective supply of public sports services, which is of great significance to the comprehensive construction of a modern socialist country.

CONCLUSION

According to the experimental results of this paper, we can draw the following conclusions: (1) In the context of COVID-19, we should keep a happy mood, which is to avoid the impact of people always facing the same things. When they see the chaos around them, they will feel an unspeakable discomfort. Therefore, it is important to have a clean living environment. (2) It is very important to improve immunity, because improving immunity can ensure the normal operation of the immune system. If the immune system is not strong, the spirit will be in a state of depression and degeneration, and life is easy to be interfered by the outside world. Under the background of COVID-19, this paper carried out research on the injury situation of community home sports and prevention strategies. This paper explained the purpose of community home sports and the injury situation of community home sports one by one. The experimental group and control group studied the prevention effect of community home sports injury before and after the experiment. At the same time, the effects of the experimental group and the control group on the relief of sports injuries in the community home before and after the experiment were explained.

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AUTHORS' CONTRIBUTIONS: The author has completed the writing of the article or the critical review of its knowledge content. This paper can be used as the final draft of the manuscript. Every author has made an important contribution to this manuscript. Weifang Hai and Yang Liu: writing and execution.

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