INFLUENCE OF CORE TRAINING ON THE ABILITY OF CONTROL AND BALANCE IN SURFERS

A INFLUÊNCIA DO TREINO DE CORE SOBRE A CAPACIDADE DO CONTROLE E EQUILÍBRIO EM SURFISTAS

LA INFLUENCIA DEL ENTRENAMIENTO DEL NÚCLEO EN LA CAPACIDAD DE CONTROL Y EQUILIBRIO EN LOS SURFISTAS

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ABSTRACT

Introduction: Surfing depends mainly on the driving force resulting from wave oscillations. Athletes need to paddle in the wave zone and complete the competition actions in the most robust section on the wave walls. This requires extreme balance skills, which can be strengthened with specific training. Among them, it is believed that core training could be beneficial. Objective: To study the influence of training on a stable and unstable platform on the regulation of the surfer's orthostatic posture under balance disturbance. Methods: Members of the Hainan National Surf Training Team were volunteers for the experiment; their physical training methods, memory training, and effects evaluation were analyzed. Results: 90% of athletes manage to complete the balance control in a short-term autonomous position on the balance board in 1 week; their progress also depends on the training duration, times, and intervals; the progression rule lies according to the literary theory of sports training. Conclusion: With the further extension of the balance board training cycle, it is believed that athletes' ability to control balance and real competition comprehensive capabilities will continue to increase, the overall technical level and stability of their performance will be even greater. ***Evidence level II; Therapeutic Studies - Investigating the results.***

Keywords: Water Sports; Postural Balance; Simulation Training.

RESUMO

Introdução: O surfe depende principalmente da força motriz resultante das oscilações nas ondas. Os atletas precisam remar na zona de ondas e completar as ações da competição na seção mais forte nas paredes das ondas. Isso exige extrema habilidade de equilíbrio, que pode ser fortalecida com treinos específicos. Dentre eles, acredita-se que o treino de core poderia ser benéfico. Objetivo: Estudar a influência do treino em plataforma estável e instável na regulação da postura ortostática do surfista sob perturbação do equilíbrio. Métodos: Membros da Equipe Nacional de Treinamento de Surf de Hainan foram voluntários do experimento, foram analisados os seus métodos de treino físico, treino de memória e avaliação dos efeitos. Resultados: 90% dos atletas conseguem completar o controle de equilíbrio em uma posição autônoma de curto prazo na prancha de equilíbrio em 1 semana, a velocidade de seu progresso também depende da duração do treino, tempos e intervalos, a regra da progressão encontra-se de acordo com a teoria literária do treino esportivo. Conclusão: Com a extensão adicional do ciclo de treino da prancha de equilíbrio, acredita-se que a capacidade dos atletas no controle do equilíbrio e capacidades abrangentes de competição reais continuarão a aumentar, o nível técnico geral e a estabilidade de seu desempenho serão ainda mais aprimorados. ***Nível de evidência II; Estudos terapêuticos - Investigação de resultados.***

Descritores: *Esportes Aquáticos; Equilíbrio Postural; Treinamento por Simulação.*

RESUMEN

Introducción: El surf depende principalmente de la fuerza motriz resultante de las oscilaciones de las olas. Los deportistas necesitan remar en la zona de la ola y completar las acciones de la competición en la sección más robusta de las paredes de la ola. Para ello, es necesario contar con habilidades de equilibrio extremas, que pueden reforzarse con un entrenamiento específico. Entre ellas, se cree que el entrenamiento del núcleo podría ser beneficioso. Objetivo: Estudiar la influencia del entrenamiento en una plataforma estable e inestable sobre la regulación de la postura ortostática del surfista bajo una perturbación del equilibrio. Métodos: Los miembros del Equipo Nacional de Entrenamiento de Surf de Hainan fueron voluntarios para el experimento; se analizaron sus métodos de entrenamiento físico, el entrenamiento de la memoria y la evaluación de los efectos. Resultados: El 90% de los atletas consiguen completar el control del equilibrio en una posición autónoma a corto plazo en la tabla de equilibrio en 1 semana; su progreso también depende de la duración del entrenamiento, los tiempos y los intervalos; la regla de progresión se encuentra según la teoría literaria del entrenamiento deportivo. Conclusión: Con la ampliación del ciclo de entrenamiento en la tabla de equilibrio, se cree que la capacidad de los atletas para controlar el equilibrio y las capacidades integrales de la competición real seguirán aumentando, el nivel técnico general y la estabilidad de su rendimiento serán aún mayores. ***Nivel de evidencia II; Estudios terapéuticos - Investigación de resultados.***

Descriptores: *Deportes Acuáticos; Equilibrio Postural; Entrenamiento Simulado.*

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INTRODUCTION

Surfing is made by athletes using the kinetic energy of the waves (swells), the process of standing on a surfboard to complete various stunts, it requires athletes to have strong balance control, while special physical fitness and comprehensive technical ability, but also to the formation of wind and waves on the sea, have a deeper understanding of meteorological knowledge, it is highly ornamental and challenging.[1] With the progress of society and people's passion for seeking to dance with nature, surfing is promoted in countries all over the world, popularization speed is very fast. On June 15, 1995, the international Surfing Federation is recognized by the International Olympic Committee, tied as an official competition event.[2] China has also listed surfing as a key event in the official competition of the Western Safety Games, formed a national training team in 2017, in 2018, a national training team was established in different echelons.[3] How to learn, catch up and surpass as quickly as possible in the surfing of master rulin, develop top players as soon as possible, it is the demand of the provinces, it is also an urgent need for the development of national surfing.[4] Surfing mainly relies on the changes of the waves to provide the driving force to move forward, athletes are required to go from paddling into the wave zone to trying to control the waves and to complete the competition scoring action in the strong section on the wave wall. The requirement for surfing competition is to complete a set in 20-30 minutes, but every time during daily training is more than 2 hours, it can be said that this sport affects the participants' physical fitness, the requirements for endurance, reaction speed, balance, explosive power and other qualities are relatively high.[5] Therefore, good physical fitness and excellent qualities are essential, this is the basic guarantee for surfers to achieve excellent results. Studies have shown that Yassine, Negra and others believe that, the meaning of athlete's physical fitness is the basic athletic ability of the athlete's body, it is the key link of the athlete's competitive level. In a broad sense, there are forms, three components of function and quality; In a narrow sense, it refers to the physical fitness of athletes.[6]

METHOD

Experimental subjects

Ten first-line athletes (5 males, 5 females) from the Hainan National Surfing Training Team were selected as the research objects. (Table 1)

Research methods

Learn from HowNet and Journal Net, and platforms such as the National Library have collected information on keywords such as "training physical fitness", "surfing", and "shortboard surfing", organize and analyze these data, improve this article better. On this basis, I have done a serious study of relevant foreign literature, organize and analyze under the premise of understanding.

Questionnaire survey method

This questionnaire conducted a questionnaire survey on the surfing team athletes of various provinces on the online platform, finally, 54 questionnaires were collected, 54 of them are valid questionnaires, the validity rate of the questionnaire is 100%. The questionnaire is mainly divided into two parts, the first part is an investigation of the basic situation of the athletes, investigate basic information including the athlete's gender, age, and training duration. The second part is to investigate the athletes' current emphasis on physical training and training methods, hope to understand the current surfer's emphasis on different physical fitness, and have a basic understanding of the current physical training methods of surfers, for further analysis and research. Import the data obtained from the questionnaire into SPSS 22, the Cronbach's alpha coefficient and KMO value of this questionnaire are 0.853 and 0.841, respectively, are above 0.8, it shows that the reliability and validity of this questionnaire are relatively high, the content design of the questionnaire is more in line with the questionnaire survey standards. (Table 2)

Table 1. Experimental Subjects.

The name	gender	Age (years)	Training years (years)	Sports level
XX	male	20	More than 5 years	National elite athlete
XX	male	18		
XX	male	1		
XX	male	21		
XXX	female	25		
XX	female	19		
XXX	female	23		
XX	female	19		

Mathematical Statistics

Distribute relevant questionnaires to surfers, and use Excel software to organize the questionnaire data into tables and statistical graphs, in order to reflect the point of view of the paper more intuitively. Fully understand the strengths and weaknesses of Chinese surfers' physical fitness training, provide data support for the paper.

RESULTS

Balance is a relatively unfamiliar word, but it is essential for surfing. Athletes react to water waves, the balance ability of the waves and the ability to predict and judge, it is the basic quality that surfers must possess.[7] According to the data shown in Table 3, it can be known that, 57.41% of athletes believe that balance is very important for shortboard surfing, 14.81 070 athletes think it's average, there are also 27.77% of athletes think it is not important. It can be seen that, there are still many athletes who don't realize the importance of balance to surfing, ignore the grasp and training of balance, it is not conducive to the improvement of the level of surfing. (Table 3)

According to Figure 1, the survey of surfers' balance training methods shows that, the most commonly used training method is standing on one foot with closed eyes, a total of 31 people chose, accounting for 57.41%, followed by leaning over the Swiss ball balance exercise, 22 people use

Table 2. Reliability test of this questionnaire.

Sample size	Cronbach's alpha	KMO
54	0.853	0.841

Table 3. Survey of surfers' importance on balance.

	Sample size	The proportion
It is very important	31	57.41
general	8	14.81
Isnot important	15	27.77

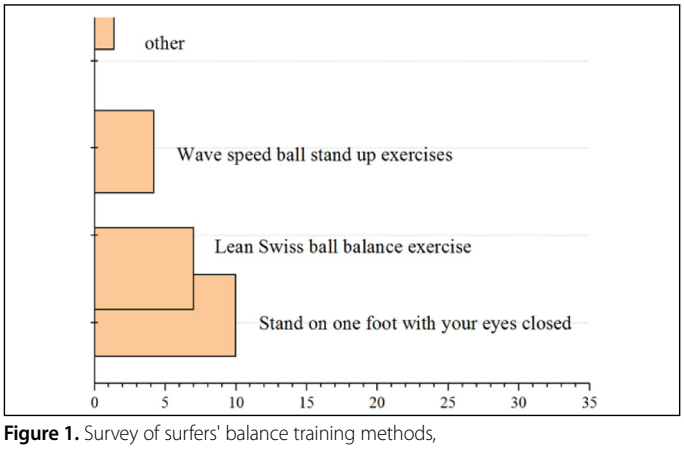

Figure 1. Survey of surfers' balance training methods,

this method to improve their balance, it accounts for 40.74%, and 27.78% of athletes take the wave speed ball standing exercise, the remaining 12 people took other training methods, accounting for 22. 22%.

DISCUSSION

The surf competition is a group of 4 athletes, in the same area at sea, at the same time, relying on the individual athlete's judgment on the law of wave surging, choose the opportunity to catch the better swell, the process of starting up the board and completing various difficult stunts on the wave arm.[8] Swells formed near the coast, it is formed by the collision of the seawater potential energy of the far sea rushing to the coast and returning seawater. Although the height and size of swells are ever-changing, but there are still rules to follow. In daily training day after day, year after year, after a high-level surfer stands on a surfboard with the help of the swell, its super balance control ability is the most basic guarantee for winning. After observing the previous surfing competitions and videos at home and abroad, some of the top surfing competition athletes in our country, in the competition, there are also painful cases of falling down due to balance control problems.[9] This also shows that even if there is a superb surfing stunt level, once you lose your balance on the board, can only hug the board and return. Further analysis shows that, the higher the sea swell, the stronger the surfer's potential energy, the greater the acceleration, the quality of each stunt, the higher the degree of slack; The longer the period of swell retention, the greater the number of high-quality stunts performed by surfers. But things are two-sided, the larger the swell, the more difficult it is for the athlete to control the balance on the wave arm, the higher the requirements for its ability to control surges; The surge remains unabated for a long time, the higher the requirements for the surfer's ability to control balance and the overall quality, the more difficult it is. The growth of an excellent surfer, it involves many factors such as material selection, basic physical fitness, special physical fitness, special technology, psychological quality, etc, the rapid improvement of surfer's ability to control balance is a more important part.[10] It can be seen that the improvement of surfers' own balance control ability is the first, it is the most basic guarantee for excellent results. For example, in the national competitions in recent years, some outstanding players with a high demand for the championship, it is not uncommon to lose the top three and advance to the top due to the lack of solid basic skills in controlling balance. Therefore, it is only in daily training to arrange special training for balance control ability in a planned way, aiming at the mastering laws of athletes at different ages and sports skills, carry out the balance control ability training step by step and require athletes to carefully experience the balance control ability exercise, explore the law and improve steadily.

Taking into account the characteristics of surfboards gliding unimpeded by the waves at sea, during the development of the balance board, specially selected rigid composite materials to enhance the overall rigidity, surface hardness and lightness of the balance board; The rollers are made of high-quality thick-walled stainless steel with multiple specifications such as coarse, medium and fine, in order to benefit the athletes of different levels such as elementary, intermediate and advanced, they can improve their use in various stages of training .

CONCLUSION

In the process of the surfer's balance control training, it did not take up a large amount of training time, when you just use morning exercises or you can't perform sea surfing training, try to carry out a certain amount of balance board training. After more than half a year of planned balance control training and regular exploration, it was discovered that, the skill level of surfers who received balance board training improved rapidly, in particular, the ability to control surfboards during sea surfing has improved significantly.

All authors declare no potential conflict of interest related to this article

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