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ALTERNATIVE MEANS OF PHYSICAL TRAINING IN YACHTING

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Abstract

Aim. The pourpose of this research is to investigate the need to use alternative training methods and complementary sports to maintain performance in yachting.

Methods. We searched the following computerized databases: Web of Knowledge, Google Scholar and profile websites to collect recent data on the physical training in yachting.

Sailing is a sport that combines physical effort with cognitive and mental requirements, involving both the muscles of the entire body and the cardiovascular system, balance, and neuromuscular coordination. Maneuvering sports boats particularly requires the upper limbs, back, and shoulders, while maintaining body position and adapting to the boat's tilts activates the abdominal and lower muscles.

Conclusions. Performance in yachting depends on endurance, agility, flexibility, concentration, and quick decision-making, all of which are influenced by weather conditions, the type of boat, and the duration of the regatta. Under these conditions, proper physical training becomes essential not only for technical performance, but also for maintaining mental health and preventing injuries.

Complementary sports and alternative training methods offer valuable opportunities to develop the physical and cognitive abilities necessary for competitive sailing, allowing athletes to maintain an optimal level of fitness during periods when access to the water is limited.

Keywords: yachting, alternative means, physical training.

Introduction

The physical effort involved in sailing is characterized by a combination of aerobic, anaerobic, and isometric components. During regattas, sailors are required to sustain prolonged aerobic activity while simultaneously performing short bouts of high-intensity effort during sail trimming, tacking, or gybing maneuvers. A distinctive feature of sailing is the extensive use of isometric muscle contractions, particularly during hiking, where athletes maintain static positions to counteract wind forces and stabilize the boat. These sustained contractions impose significant demands on muscular endurance and cardiovascular regulation, differentiating sailing from sports dominated exclusively by dynamic movement patterns. (Tan et al., 2006; Cunningam & Hale, 2010)

Sailing is a sport that involves complex physical effort, requiring the integrated use of the entire body. (Bowen, 2025) Muscle activity is concentrated mainly in the upper limbs, back, and shoulders, which are needed to handle ropes and sails, as well as in the abdominal muscles and lower limbs, which are essential for maintaining balance, stability, and body position when tilting. (Walker, 2024) In addition, this activity requires a high level of cardiovascular endurance, agility, and flexibility, which are necessary for adapting to changing environmental conditions, such as changes in wind intensity, sea conditions, and rapid movements from one side of the boat to the other. Physical requirements vary depending on the type and size of the boat and sailing conditions. (First Class Sailing, 2023)

In an article published in June 2025 on its official website, Brightlingsea Sailing Club highlights a number of benefits associated with yachting among athletes. According to the source, this sport contributes to the development of muscle strength and endurance, improves cardiovascular capacity, and supports mental health, including by reducing stress levels. Positive effects on agility, concentration, communication skills, spatial orientation, and organizational skills are also mentioned (Brightlingsea Sailing Club, 2025, June). Practicing this sport contributes to increased bone strength and improved flexibility, other physical characteristics positively influenced by yachting (First Class Sailing, 2023), being referred to as a physically demanding sport. (First Class Sailing, 2023).

Analysis of the information and statements presented above highlights the importance of a high level of physical fitness for sailing. In the following lines, we will present some alternative means of physical training, aimed at achieving the optimal level of performance in this field.

Alternative methods for developing the physical condition necessary to achieve performance in yachting

Given the multifactorial demands of sailing, maintaining an optimal level of physical fitness is essential for both performance optimization and injury prevention. However, sailing is highly dependent on environmental conditions and access to water, which can limit regular on-water training. Under these circumstances, the integration of alternative and complementary training methods becomes a necessary component of long-term athlete development. These methods aim

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to preserve and enhance aerobic endurance, isometric strength, balance, and neuromuscular control, ensuring continuity of physical preparation during off-water periods.

An example of a promoter of physical training as a central element of performance in competitive yachting is Bruno Fontes Ferreira da Silva, Brazilian Olympic athlete and coach, multiple Olympic participant and medalist in continental competitions, who expanded his sporting activity by founding the Bruno Fontes Sailing Academy, a sports club and training center focused on the integrated development of athletes, from youth level to international performance, including coaching the Olympic teams of several countries. (brunofontes.com, 2025)

An analysis of the content regularly published on his media channels highlights the particular emphasis placed on specific physical training, especially through the use of hiking simulators. Isometric positioning, frequently used in sailing, serves to shift the boat's center of gravity in order to maintain the most stable and hydrodynamically efficient position on the water surface (brunofontesoficial, f.a.).

At the Bruno Fontes Sailing Academy, physical training is approached systematically and individually, adapted to the biomechanical and physiological requirements of sailing. The methods used include functional strength training, core training, specific endurance, as well as mobility and injury prevention exercises, integrated with technical and tactical training on the water. Fontes emphasizes the importance of constant monitoring of athletes and the use of digital tools for planning and evaluating physical training, highlighting its role in maintaining long-term performance in elite sailing (brunofontesoficial, f.a.).

An essential aspect of modern physical training for athletes in this discipline is the integration of exercises that improve balance, mobility, and trunk stability. Yoga and Pilates sessions are recognized in the literature for their beneficial effects on postural control, muscle flexibility, and dynamic balance, which are critical elements in sports that place complex demands on the core and proprioception, such as sailing. Studies show that structured yoga programs can significantly increase flexibility and balance in athletes, suggesting their potential to support physical performance in sports that require fine motor control and adaptation to unstable environments (Luo & Huang, 2023). Recent evidence also indicates that both Pilates and yoga can improve dynamic balance and functional movement, which can reduce the risk of injury and increase the efficiency of complex movements (Lim et al., 2024).

In addition to these practices, the use of balance boards provides a land-based training environment for stimulating neuromuscular stabilization and coordination through adaptive responses to unstable surfaces, a recognized benefit in training for balance sports and injury prevention by increasing muscle coordination and posture (Lindberg, 2021). In the context of sailing, these complementary activities function as methods for improving postural control and adaptation to the specific demands of moving boats, where balance and mobility are crucial for technical efficiency and overall performance.

Stand-up paddleboarding and surfing are other complementary methods of physical training for yachting practicants, contributing to the development of dynamic balance, isometric trunk strength, and neuromuscular coordination (Schram et al., 2016; Schram et al., 2015).

Cycling is another type of training frequently used by sailors as a cross-training method, which contributes to the development of aerobic capacity, lower body muscle endurance, and the ability to maintain prolonged effort. The physiological adaptations achieved through cycling, such as increased VO_2 max and muscle energy efficiency, can be transferred to competitive yachting, where athletes must maintain demanding positions such as hiking and react to variable water and wind conditions (Bompa & Buzzichelli, 2019; Seiler & Tønnessen, 2009).

Studies show that aerobic training on a bicycle allows athletes to maintain their physical fitness even during periods when access to water is limited, preventing performance losses specific to yachting and supporting the cardiovascular adaptations necessary for regattas. In addition, cycling strengthens the leg muscles and improves overall endurance, facilitating the maintenance of isometric positions characteristic of sailing and optimizing body control during complex maneuvers (Cronkleton, 2025; Nunez, 2025).

Therefore, cycling is an effective complementary method in the physical training programs of sailors, integrating the development of aerobic endurance, lower body strength, and the ability to maintain dynamic positions, all of which are essential for performance on the water.

Another discipline frequently mentioned as a complementary sport used in the physical training of yachting athletes, due to the simultaneous use of the muscles of the lower limbs, trunk, and upper limbs, is rowing. From a physiological point of view, rowing develops both aerobic capacity and muscle strength and intersegmental coordination, adaptations relevant to maneuvers that involve combined efforts and demanding postures. The cyclical and controlled nature of the movement also allows for the development of general endurance with a low risk of injury. (Allen, 2026; Bahchevanski, 2022)

Climbing and bouldering are also effective activities for developing isometric strength, muscle endurance, and core stability, especially in the upper limbs. Studies show that climbing requires intense postural control and neuromuscular coordination, qualities that are essential for maintaining positions and quickly adapting to the changes in balance encountered in sailing. (Giles, Rhodes, Taunton, 2006)

Swimming is recognized as an aerobic training method with low impact on the joints and is widely used as a form of cross-training in endurance sports. It contributes to improving cardiovascular capacity, overall muscle endurance, and breath control, which are relevant for yachting athletes subjected to prolonged efforts in regattas. In addition, the aquatic environment facilitates active recovery and prevents overexertion. (Chen et al., 2024; Baldwin Kornrich, n.d., 2026)

Running is an effective method of aerobic training, capable of increasing maximum oxygen consumption (VO_2 max) and improving the aerobic threshold through specific cardiovascular and muscular adaptations. Through regular endurance training, the cardiorespiratory system becomes more efficient in delivering oxygen to the muscles, which allows for sustained effort over extended periods, an essential aspect for performance in yachting, where cardiovascular demands can be high and prolonged. (Jones & Carter, 2012)

In recent years, CrossFit has been integrated as a general physical training method in competitive sports due to its functional and multidimensional nature. CrossFit workouts combine strength, endurance, and coordination exercises, contributing to the development of mixed effort capacity and neuromuscular adaptability. Systematic reviews show that this type of training can improve overall physical condition and the ability to manage varied efforts, which is relevant to the complex demands of sailing. (Aravena-Sagardia et al., 2025)

During periods when weather conditions prevent access to water, mountain sports such as alpine skiing and snowboarding can be effective alternatives for physical training. Alpine skiing involves intense engagement of the lower limb muscles, trunk stability, and the cardiovascular system, and is associated with both high muscle strength and significant cardiovascular effort during descents and prolonged exercise. The dynamic balancing, rapid neuromuscular reactions, and postural control required to make turns and maintain balance on variable terrain are functional adaptations that can be transferred, helping to maintain stability and body control in sailing. Physiological studies indicate that alpine skiing requires complex components of physical fitness, including high aerobic capacity, leg muscle strength, and coordination, supporting its use as a form of off-season training for sports with similar requirements for stability, neuromuscular control, and endurance. (Müller et al., 2011)

Conclusions

Analysis of alternative physical training methods highlights the essential role of complementary and functional exercises in optimizing performance in sailing. Activities such as rowing, climbing, swimming, running, CrossFit, mountain sports, or balance equipment training develop key physical components: strength, endurance, balance, coordination, and core stability, and contribute to adaptation to the dynamic demands of boats. In addition, these methods support the cognitive and mental functions of athletes, including attention, concentration, quick decision-making, and stress management, all of which are essential in sailing competitions. The integration of these activities into training programs, individualized and systematically monitored, allows for long-term performance maintenance, increased technical and tactical efficiency, and ensures the harmonious development of sailors.

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