

ТЕОРІЯ І МЕТОДИКА ПІДГОТОВКИ СПОРТСМЕНІВ

PHYSICAL PREPARATION OF QUALIFIED SPORTSMEN IN SAILING

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Анотація

В статті розкрито проблеми та особливості загальної і спеціальної фізичної підготовки кваліфікованих яхтсменів. Розглянуто програму з фізичної підготовки кваліфікованих яхтсменів американської збірної команди «Таміг» з вітрильного спорту, яка призначена для підготовки спортсмена до змагальної діяльності в складних погодних умовах. Визначено, що фізична підготовка займає важливе місце в системі спортивного тренування кваліфікованих яхтсменів. Показано, що в спортивному тренуванні яхтсмена необхідно приділяти велику увагу розвитку сили, витривалості, координації та гнучкості, тому що ці якості знадобляться у змагальній діяльності під час перегонів при великій швидкості вітру (більш 20 вузлів).

Ключові слова: фізична підготовка, вітрильний спорт, кваліфіковані спортсмени.

Аннотация

В статье раскрываются проблемы и особенности общей и специальной физической подготовки квалифицированных яхтсменов. Рассмотрена программа физической подготовки американской сборной команды «Тамиг» по парусному спорту, которая предназначена для подготовки спортсмена к соревновательной деятельности в сложных погодных условиях. Определено, что физическая подготовка занимает важное место в системе спортивной тренировки квалифицированных яхтсменов. Показано, что в спортивной тренировке яхтсмена необходимо уделять большое внимание развитию силы, выносливости, координации и гибкости, так как эти качества понадобятся в соревновательной деятельности в гонке при большой скорости ветра (более 20 узлов).

Ключевые слова: физическая подготовка, парусный спорт, квалифицированные спортсмены.

Actuality. Physical training is an important part of sports training sailors in parallel with technical and tactical training. A high level of physical preparedness of the athlete creates the foundation for implementing the other training.

According to many authors [5, 6, 7], physical training is an integral part of the process of sports development of athletes, providing the framework for competitive activity.

Today yachtsman can show a good sports result, if it is to have a high level of physical fitness.

Experts say that it is necessary to develop the physical qualities of sportsmen taking into account specificity of the sport and the conditions of competitive activity [1, 2, 14]. Depends on the number and content of training, the amount of physical activity and its focus.

Backlog of Ukrainian sailors from the world sailing elite due to the lack of an effective training system, the content and methods of training, low level of development of physical qualities that are relevant to competitive activity. This determined the relevance of our work.

Analysis of recent publications. Sailing makes greater demands on the physical qualities, health and psyche of athletes who are in the process of sports training experience large physical and mental stress.

If to systematically show good results, the athlete need have a good



Exercises for Stretching (arms, legs, stomach and back)

A. Legs	B. Back	C. Arms
1. Standing: calf push; legs apart hamstring stretch as you push against a wall; toe touch; quad pull (head tucked); splits.	1. Stand with feet together and arms at sides. Starting with head, slowly roll spine down toward the floor. Try to imagine each vertebrae rolling forward one at a time. Continue until hands are close to floor. Slowly reverse.	1. Standing bent over arm pull from wall; standing arm stretch behind back one hand over shoulder and other up behind back to touch each other; cross chest arm stretch.
2. Kneeling: One knee down and other foot forward and thrust hips down; single-legged squat; kneeling knees apart roll back to heels.	2. Lying on stomach with arms outstretched overhead. Raise and hold alternating arm/leg for 5 seconds and reverse. Do 15-20 sets.	2. Rotator Cuffs – using very light weights (less than 15 lbs) and three sets of 10:
3. Sitting: feet together knees bent and push knees to floor; sitting legs straight toe reach; on your back with one foot under butt quad stretch; sitting with legs crossed and push knees together; holding one heel extend that leg.	3. Three sets of 10 superman back arches.	a. Straight arm forward and up with palms in, and lower with palm out.
4. Lying: on your back knees to chest one at a time and across waist; on your back legs bent feet together neck stretches; on your back knees and hips bent 90 degrees in the air shoulders flat rotate knees full left to full right; on your side upper body propped to stretch abdomen sides; on your stomach pull feet to buttocks.	4. Maintain good posture while sitting and standing.	b. Straight arm sideways and up with palms up, and lower with palms down.
5. Groin stretch – lean down to one side with opposite leg extended out, and grasp ankles. Switch sides.		c. Upper arm over bench, lower arm hanging down, rotate forward and back.
6. Hip Dip – slowly lower yourself into a deep squat with butt below knees. Then push out against your thighs with your elbows and tilt your pelvis backward so your butt sticks out.		d. Standing with elbow at side and arm at 90 degrees, using machine, rotate from side to straight forward with resistance, and similarly from cross-stomach to straight out with resistance.
7. Side leg-lifts – three sets of 15-20 lifts, alternating legs.		

health, have a set of special physical qualities - rapidity, strength, endurance, adroitness, have a balanced nervous system, development of thinking, subtle muscle-movement sensation, attention, memory, to be able to control your mental state, be emotionally stable in extreme conditions of training and competition.

Physical preparation is important at all stages of long-term preparation [11, 12]. On every next stage

the value of special physical training increases [13].

Motor activity yachtsman takes place in different weather and wind conditions in sailing [10]. Motor actions yachtsman complex coordination as on a rocking pole, which is dominated by static efforts a large number of muscles. Short term speed-strength efforts during the turn and changing maneuver boat require versatile physical prepara-

tion of the athlete. Unfortunately, prolonged sailing do not develop the physical qualities that are needed yachtsman in strong winds (over 15 knots), and in the storm. Poor development of special physical qualities of the yachtsman distorts technique to control the yacht.

Researches experts have shown that the level of physical readiness of Ukrainian sailors has a low level [11]. For example, in Russia in





Table 2

Exercise Routines

<p>I. Focus on upper and lower body strengths</p>	<p>II. Slow count strength.</p>	<p>III. Balance and Strength</p>	<p>IV. Strength and Endurance</p>
<p>A. Lower: Two sets of each 20 double-leg squats and 15 single-leg lunge to the rear with light weight – just bar; 15 double leg and 10 lunges with 70 lbs; 10 doubles and 5 lunges at 140; 10 and 5 at 210; 15 and 10 at 140; 20 and 15 at 70. This is followed by either 4-8 sets of dumbbell lunges with 45 lbs, or balance on one leg while doing 5-10 barbell reverse curls (20-40 lbs). Next is 15-minute sessions of treadmill, stair master (holding 25 lbs each hand), and rowing machine.</p> <p>B. Upper: 2-5 sets of the circuits. 25 pushups with feet on exerball, 20 ball rolls bringing knees to chest with feet on ball, 15 pull ups, reverse curls while balancing on one bent leg then other, 15 lbs each hand crossing in front while on bent single leg then other, 10 straight arm out to side rotations, chest on ball feet out lift arms up to side, 20 dips, 20x45 lbs single arm pulls with knee on ball, 50 crunches on ball, arm extensions with shoulders on ball.</p>	<p>A. Upper body: Same as the “balance” workout, but do it slowly.</p> <p>B. Lower: leg presses at 220, calf extensions at 220, leg extensions at 120, leg curls at 110. Do 4-6 sets. Notes: Each set is one minute. Again, each weight set should be followed by an aerobic set (treadmill, stairmaster, rowing, jumping rope, bicycle).</p>	<p>A. Lower – several minutes hiking bench; leg press (15 x 280 lbs); 10 wall leaps (double and single-legged); free weight reverse lunge squats (20 of each leg lunging aft at 70 lbs plus bar); restricted squats (140 lbs plus bar by 15); balance board hold squat position (hold 15 lb dumbbells for 1 minute); balance board one foot on center with other elevated and do single leg squats (15 lb dumbbells by 10 each leg); calf extensions.</p> <p>B. Upper: 2-5 sets of the circuits. 25 pushups with feet on exerball or use balance board; 20 ball rolls bringing knees to chest with feet on ball; 10 start with ball at waist and roll forward till ball at feet; 15 triceps extensions; 15 pull ups, 10 bent arm leg rotation followed by 10 flutter kicks on each side and center; single arm bent arm hang flutter kicks; reverse curls on balance board; 15 lbs each hand crossing in fronton balance board, 10 straight arm out to side rotations, chest on ball feet out lift arms up to side; 20 dips; 20x45 lbs single arm pulls with knee on ball; 50 crunches on ball; arm extensions with shoulders on ball; back extension hold for 1 minute.</p>	<p>A. Ed’s Uppers – Strength and aerobic conditioning: 3x15 balance board pushups and triceps extensions; 3x15 single arm bent over lat pulls and reverse chest press (chest pulls); 3x15 pull-ups and alternate side flutter kicks; 3x15 balance board dumbbell curls and nautilus curls; 3x50 crunches and 60 second hold back extensions; 4x15-minute treadmill (5 min. at 7 and 10 min. at 8.5), cycle, stairmaster, rowing machine.</p> <p>A. Ed’s Lower – Strength and aerobic conditioning: several minutes hiking bench; 3x15 leg presses and single leg squats; 3x15 leg extensions and curls; 3 sets isometric squat holding dumbbells; 3 x 10 single leg dips holding dumbbells; 3 x 10 standing knee lifts using weights; 4x15-minute treadmill (5 minutes at 7 and 10 minutes at 8.5), cycle, stairmaster, rowing machine.</p>

<p>V. Alternate upper and lower body training, with hiking bench each evening</p>	<p>VI. Ski Fitness</p>	<p>VII. All-around workout; good for getting back into it without getting sore</p>
<p>A. Upper body (2-4 sets of the following) Pull-ups (6-12) Bent-arm hangs and leg lifts (15-25) Curls with palms down (18 x 45 lbs) Dips (12-18) Lat pulls (18 x 50 lbs) Bar Tricep extension (18 x 75 lbs) Crunches (50) Treadmill run for 10-20 min. after final set</p> <p>B. Lower Body (5 sets) Leg Presses (18 x 220 lbs) + foot presses (6) Leg extensions (18 x 90 lbs) Leg curls (18 x 90 lbs) Treadmill run for 10-20 minutes</p>	<p>A. Core: unless otherwise indicated, do each as three sets of 12. 1. Swiss-ball bridges – get in a push-up position with your shins resting on a ball. Keeping your back straight, slowly bring your knees to your chest, rolling the ball toward you. Pause, then extend. Once you become comfortable balancing, rotate your hips to one side and, as you pull the ball and your knees in, roll the ball along the side of your leg. Alternate legs. 2. Sitting Swiss-ball ab-rotations – Sit on the floor, leaning so your back forms a 45-degree angle the floor. Hold a ball in front, slowly rotate it to one side, and touch it to the floor. Pause, bring the ball across your chest to the other side, touching the floor to complete a repetition. 3. Supermen – lie on the floor and raise one arm and the opposite leg. Hold for a two-count, then lower and reverse sides. 60 reps. 4. Back extensions – with the ball under your stomach, extend your hands and balance on the floor. Slowly raise your legs until they are in a straight line with your back.</p> <p>B. Daily Workouts: each exercise should emphasize going slow and maintaining form. 1. Monday and Thursday: Strength 2. Tuesday and Friday: Plyometrics and Rope jump C. Strength: unless otherwise indicated, do each as three sets of 12. 1. One-legged balance squats – with one leg extended forward, squat down on the other, keeping your hips, knees, and toes aligned and your torso upright. If necessary, keep a hand on a wall or chair. Complete as many reps as you can with each leg. Try with eyes shut or on balance beam. 2. Barbell squats – with your feet shoulder-width apart, place the bar across back of shoulders. Keeping your back straight, slowly squat until thighs are parallel to the ground. 3. Single-leg Iron Chair – with a ball behind your back and against the wall, lower yourself on one leg with other outstretched. Hold for two seconds and return. 4. Swiss-ball hamstring curls – lie on the floor on your back with heels on ball. With your shoulders on floor, raise pelvis off ground to form bridge. Slowly draw heels toward you, pulling the ball toward your butt until the soles of your feet are on top of the ball. 5. Multi-lunges – holding medium weight dumbbells straight overhead, take a stride forward with your left foot until thigh parallel to floor. Pause, return to standing, and step out at 45-degree angle. Pause, return to standing and step straight out to the side. Repeat with other leg.</p>	<p>A. Upper Pushups (25) Nautilus Triceps (15x120) Pull-ups (15) Pull-up bar: hip rotator, side flutter Single arm leg flutter kick Balance board bent leg reverse curls (10x65) Lat pulls (15x50) Dips (20) Crunches (50) Back extensions (1 min.)</p> <p>B. Lower Leg press (15x220) Leaps (10 double-, 10 single-leg) Single leg squat machine (20x115) Balance board (1 min; 45 lb dumbbells) Single leg squats (holding 45's)</p>



V. Alternate upper and lower body training, with hiking bench each evening	VI. Ski Fitness	VII. All-around workout; good for getting back into it without getting sore
<p>C. Bench: 30-90 minutes of bench in 4:30 to 4:45 minute intervals (alternate legs)</p>	<p>D. Plyometrics and jump rope</p> <ol style="list-style-type: none"> 1. Lateral box jumps – stand next to a box or bench 12-18 inches high. With most of your weight on outside leg, spring laterally over the box and land on opposite foot. Absorb the impact with your quads. Explode continuously for 30-45 seconds. Once you can do that, bound while keeping both feet together. 2. Jumping rope – with both feet together, jump for 10 minutes. 3. Scissor Jumps – jump into a lunge position with your left foot in front of the right. Then jump up and switch feet in the air, landing with legs reversed. 4. Forward Bounds – Set up 10 cones in a line on a field. Jump over each with both feet. The moment you hit the ground, immediately explode forward again. 	<p>C. Aerobic: 15 minutes on any two of: treadmill, rowing, stair-master (25 lb dumbbells), bicycle.</p>

Notes:

1. You must exercise for at least 40-45 minutes before your body begins to burn stored body fat. Exercise must be continuous; do not stop to chat and then restart. Stretch before and after every workout.
2. Ideally, work out 5-6 days per week. With your limited schedule, recognize that doing what you can is better than none at all. “If you are getting tired in a windy regatta, imagine how the person who hasn’t worked out feels.”
3. Taper towards the event (one week).
4. While on bench, maintain shoulders beyond hips.

2005, 45.5% of the top sailors did not fulfill norms of physical fitness and only 6% can did it. And in 2010, 64.3% of the sailors-men and 66.6% of the sailors-women are not coped with the norms of the run; 91.7% of sailors-women has not complied with the standard of swimming in the 400m. [17]. Whereas foreign Team USA, UK, Australia, Germany, and others devote a significant place in the system of physical preparation of sports training of qualified yachtsmen [3, 15].

In this regard, **goal** of our study was to study the features of the physical training of qualified yachtsmen TAMUG Sailing Team Texas A&M University at Galveston (USA).

Results and discussion. The sailing competition held at different wind strength (without limitation) and the athlete must be physically well prepared. order to achieve the necessary preparedness, the athlete needs to train year-round, 5-6 days a week for many years, spending most six months at the training camp. Rationally planned training process contributes to achieving the necessary level of preparation by a certain age. However, not all athletes who started at a young age, it is possible to achieve a high level of skill, to develop the required physical qualities and mental functions [4, 9].

During the year, the volume and intensity of physical training vary considerably: in the preparatory period is increased, and in the competitive and while training on the water – is reduced. In the complex physical training lesson of 60-70% of the time allocated to special exercises. 30-40% of the time is for games (basketball, volleyball, badminton, table tennis), where the athlete must perform physical actions of the right and left hand.

Studies show that US Olympians sailors traditionally paid serious attention to the physical training with focus on general physical preparation - training on general endurance (running, biking, swimming, sports games). At each stage of preparation



set controlling standards to monitor the effectiveness of the training effects.

Thus, in a set of common standards for physical training for American sailors include: jumps (long and high), swimming at the distance of 25-50 m, sprinting 20-30m.

Tests TAMUK Team Sailing Team University of Texas in Galveston include:

- 1.5 mile run, 3.75 mile ride, 600 m swim ;
- Box Hop (80 seconds);
- Pull ups-men, Inverted row-women;
- Push Up (80 seconds);
- Crunch Test (80 seconds);
- Planks (80 seconds);
- Wall Sit/10 lbs;
- Flexibility [16].

According to test results the athlete must score the amount of points that show the level of preparedness. Total points from the above test:

- Level I- 80 pts (C or Pass for competitive sailing PE class)
- Level II- 160 pts (B for competitive sailing PE class)
- Level III- 240 pts (A for competitive sailing PE class)
- Level IV- 320 pts
- Level V- 400 pts .

Ukrainian sailors in the class «470», «Laser», «Laser-R», «49er», «Catamaran» tested for fewer tests: Cross (run): 2000 m (w) and 3000 meters (m); Pull ups-men, Push Up-women; Static Crunch Test on the bench (hands behind his head); Crunch Test [8].

A small number of tests and low standards do not allow Ukrainian sailors properly to compete on the world arena. And today scientists had studied the question of assessing the level of their training, and therefore not made adjustments to the content of the training process.

Consider a training program TAMUG Sailing Team Texas A&M University at Galveston (USA) (table 1 and table 2) [16]. Goal exercises: to compete and feel comfortable with racing for four straight days in

20+ knots, emphasizing strength, endurance and flexibility. Suggested stretches should address arms, legs, stomach and back before and after exercises.

Today, there is a priority training explosive strength and strength endurance. In addition, exercises are introduced with a barbell (for male and female crews). Serious attention is paid to training balance and stretching. The basic exercises of special physical preparation are still hiking bench exercises, imitation tacking (the transition from trapeze to trapeze) and imitation of emergency hauling rope through a block or a winch.

Conclusions. Physical training has an important place in the system of sports training of qualified sailors. Physical quality yachtsman should be developed based specificity of sport. In sports training yachtsman should be paid great attention to the training of strength, endurance, balance and flexibility, as these qualities are needed in the competitive activity in the race at a high wind speed (20 knots).

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