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ORIGINAL

AIR STAND-UP PADDLE WATER RESCUE TABLE: HOW CAN IT HELP TO THE LIFEGUARD?

TABLA AIR STAND-UP PADDLE DE RESCATE ACUÁTICO: ¿CÓMO PUEDE AYUDAR AL SOCORRISTA?

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ABSTRACT

The use of traditional and rigid boards in aquatic lifesaving cause more problems than advantages, for this reason was frequently rejected in many lifesaving services. However, based on knowledge and experimentation with inflatable boards many advantages have been proven, doubts and objections on this

material are disappearing and, in fact, are beginning to be used in lifesaving services that were previously reluctant to use them.

The aim of this study was to analyze the effect of using the table AIRSUPRA in the time of approaching for a distance of 100 meters. The sample was integrated by 16 professionals (13 men and 3 women), all of them with rescue techniques certification and updated training, but with no experience managing boards AIRSUPRA. The results show that when the approximation with AIRSUPRA table (TR1) is performed the time was of 54.13 ± 8.58 , whereas when the approaching is performed swimming the time was of 93.19 ± 25.52 , with a difference of 39.06 seconds, statistically significant ($p < 0.001$). This first study and its results point to the need for further research with this new material for rescue.

KEY WORDS: Aquatic lifesaving, aquatic rescue, stand up paddle board, approximation time, AIRSUPRA.

RESUMEN

Las tablas tradicionales y rígidas en socorrismo acuático han sido rechazadas en muchos servicios de socorrismo por los problemas que generaban. La experiencia con tablas hinchables (AIRSUPRA) ha demostrado muchas ventajas y las objeciones sobre este material están desapareciendo y ya comienzan a utilizarse en servicios de socorrismo, que antes eran reticentes.

El objetivo de este estudio fue analizar el efecto del uso de la tabla AIRSUPRA en el tiempo de aproximación en una distancia de 100 metros, con una muestra de 16 socorristas profesionales (13 hombres y 3 mujeres), certificados y actualizados en técnicas de rescate, pero sin experiencia con tablas AIRSUPRA. Los resultados demuestran que cuando se realiza la aproximación con la tabla AIRSUPRA (TR1) se obtiene un tiempo de 54.13 ± 8.58 , mientras que cuando se realiza la aproximación a nado el tiempo es 93.19 ± 25.52 , con una diferencia de 39.06 segundos, estadísticamente significativa ($p < 0.001$). Este primer estudio y sus resultados apuntan a la necesidad de profundizar en la investigación con este nuevo material para el rescate.

PALABRAS CLAVE: Socorrismo acuático, rescate acuático, tabla de stand up paddle, tiempo de aproximación, AIRSUPRA.

1. INTRODUCTION

Lifeguards play a job of great relevance, since at many times they are involved in circumstances where there is a high risk of death; they are always responsible for preventing accidents, monitor the swimming area and its users; and they are held responsible for the first aid intervention on any possible issue regarding the scope of their work (1).

Nowadays, in general, people accept that life guards are professionals who ensure the safety in the aquatic environment and therefore are the uncharged of solving any problem that takes place in that environment. Their intervention is specified in a series of liked steps called “*drowning chain of survival*” (2). The main elements promote the inspection of the drowning, the importance of providing floatation to the victim and the urgent need to take the victim out of the water (3). This is because the drowning prognosis is determined by the amount of water the drowned breathes in (3). Drowning is still one of the main causes of death by accident (4, 5) and the *European Resuscitation Council* (ERC) encourages to research about actions that may help reduce mortality and improve the drowning resuscitation skills (6, 7, 8).

There are not many evidences on which one is the most appropriate material for rescuing and life guards have conducted their work driven by their own experiences (9). Few studies have analysed the use of rescue materials. In the scientific literature it is possible to find studies on the combination of the rescue tube or torpedo buoy with fins (10, 11, 12) and some references with surfboards and other rescuing materials (13), but there are none regarding the use of Stand Up Paddle (SUP) rescue boards.

The use of rescue materials can contribute to improve of the rescue time (12) and decrease fatigue on the rescuer, since the energy use and the physiological stress are high (14, 15).

The aquatic incidents with drowning risk usually happen in the area of 50 to 100 metres from the shore (16). For that reason, materials that can provide a quick intervention may be particularly relevant to improve performance and reduce the rescue time.

Lifesaving experts considerer that approaching to the person that needs to be rescued is the first and one of the most vital steps of the rescuing process (17). The shorter the approaching time is the better the chances of getting to the person before he reaches a critical situation. For this reason, it is advised that life guards use any necessary resources they have access to (boat, board, fins), so they can carry out the rescue in the fastest possible way (18, 19).

2. STATE OF THE ART. REASONS FOR THE USE OF THE AIR SUPRA BOARD IN LIFESAVING

Experts on lifesaving and Stand up paddle and Stand up paddle surfing sports have experimented in different situations the use of the AIRSUPRA boards to

test its effectiveness. Through the experiments done in lifesaving courses and with professional life guards, a series of reasons which may justify the use of this material in Lifesaving have been initially found (20) (Figura 1):

1. There is an increase in the speed of the approach phase to the troubled person in the water or to the incident when compared with other lifesaving materials, obviously excluding materials with engine. However when the boat or the jet ski are beached, the AIRSUPRA board has a faster response level, since it does not need a collaboration for the initiation of the intervention, and it does not present additional difficulties.
2. It improves the control techniques for conscious and unconscious people. To have a floating surface, like the AIRSUPRA provides, increases visibility during the approaching phase because the lifesaver is in a higher position. Therefore, it also facilitates a permanent control of the person to be rescued. During the approaching phase it is recommended not to lose sight on the person who is going to be rescued at any time, since that could lead to derail the rescue or delay it unnecessarily (17, 18, 19). Moreover, the AIRSUPRA board always multiplies the possibility of moving any person who has suffered any mishap, either in a conscious or unconscious situation.
3. It expedites the transfer of people with problems in the aquatic environment to the shore or to a safe place. The buoyancy of the AIRSUPRA table allows an easy and fast transfer of one person, and even two.
4. It benefits the extracting of the person who is being transferred to a dry and safe area. On the shore, the AIRSUPRA board allows one or several life guards to continue the transfer across the sand without having to move the person off the table.
5. Life guards save energy expenditure. The levels of effort and energy expenditure when using the AIRSUPRA board, in the approach phase as well as in the transfer phase, are apparently lower than when using other materials (fins, rescue straps, marpas, etc.). Nevertheless, this is yet to be specifically researched.
6. It contributes to a better physical training in the life guard. The AIRSUPRA board requires a level of training, physical and technical, that helps the life guard, especially when compared with rescue materials with engine like boat or the jet ski.
7. It reduces pollution in the marine environment. One of the main advantages of the AIRSUPRA board is that it does not need fuel. Therefore, the level of contamination on the beaches is completely reduced. Moreover, it gets rid of the financial expense of the daily consumption of fuel.
8. It offers affordable cost effectiveness, both in the initial investment and in maintenance. The initial cost of an AIRSUPRA board is not high and it seems even less when compared with materials like the rescue boat or the rescue jet

ski. Additionally, the maintenance cost is minimal, since maintenance is reduced to cleaning the board with fresh water and storage it in a place out of direct sunlight.

9. It facilitates the maintenance and storage of the rescue materials. The AIRSUPRA board once deflated takes up very little space and can be easily stored.

10. It increases the immediate availability of a rescue material. Another major advantage of the AIRSUPRA board is the easiness of setting it out, for if it is already prepared (inflated) its transport to the water is easy and fast; and if it is deflated in its bag the preparation time takes between 3 to 5 minutes.

11. It minimizes the risk of collateral damage when using rescue equipment. The non-rigid surface is a great advantage because it excludes the danger of the stiff and hard rescue materials, which can cause serious consequences in accidental falls or bumps.

12. There is the possibility of alternative uses. The AIRSUPRA board safely allows some alternative uses of great educational and inclusive interest. As it is already happening with conventional surf boards, the AIRSUPRA board could enable people with disabilities to enjoy the aquatic environment

¿QUE ES?

Es una tabla de SUP/Surf hinchable especialmente diseñada para ser utilizada por los socorristas y equipos de rescate de playa. Su diseño ergonómico con líneas de sujeción a lo largo de la tabla y especialmente en los extremos, la convierten en instrumento eficaz para el socorrismo acuático.

Fabricada en PVC Dropstitch de alta resistencia, los tejidos se unen entre sí gracias a la tecnología "aerosol", que garantiza mayor unión entre las capas, aportando durabilidad y rigidez suficiente para poder ser utilizada de pie (modo SUP), de rodillas o acostado (Surf).



CARACTERÍSTICAS TÉCNICAS

325cms de altura | 76cms de ancho, 10,7cms de espesor
195 litros de volumen | Montaje entre 4 y 5 minutos
Peso del equipo completo + o -10 kg | Peso de la tabla + o - 5 kg



¿CUÁLES SON SUS VENTAJAS?

- Facilita la labor preventiva y de vigilancia del socorrista.
- Contribuye a una mejor preparación física en los servicios de socorrismo.
- Aumenta la velocidad de aproximación a la víctima o lugar del incidente.
- Mejora las técnicas para el control de víctimas conscientes e inconscientes.
- Agiliza el traslado acuático de las víctimas hasta la orilla o lugar seguro.
- Reduce copnsiderablemente el gasto energético.
- Reduce la contaminación en el entorno marino.
- Facilita el mantenimiento y almacenaje de los materiales de rescate.
- Incrementa la disponibilidad inmediata de un material para el rescate.
- Almacenaje, mantenimiento, transporte y posibilidad de uso sin titulación.
- Rentabilidad asequible, tanto en inversión inicial como en mantenimiento.



Figure1. What is it? , advantages and characteristics of the AIRSUPRA board

3. MATERIAL AND METHODS OF THE PILOT STUDY

3.1. Goals

- Test the effectiveness of a rescue material little-known: the inflatable stand-up paddle board for water rescue (AIRSUPRA).
- Verify the improvement of the approaching time when using the inflatable stand-up paddle board for water rescue (AIRSUPRA).

Since this is the first study performed with this new rescue equipment and the sample is represented by life guards with no experience in the use of the AIRSUPRA board, it has been decided to focus the data collection in the approaching phase to the possible victim, which is the most critical phase in the

whole rescue process taking into account that it allows the interruption of the drowning process and the beginning of the resuscitation phase.

This study should give way to new studies which could further develop the comparison of the AIRSUPRA board with other auxiliary rescue materials (fins, marpas or rescue tubes, torpedo buoys, rigid boards).

3.2. Sample

Sixteen professional lifeguards (13 men and 3 women) were invited to participate in this pilot study. All of them had professional certificates and were updated in rescuing techniques. None of them had experience in the use of the AIRSUPRA boards. They were informed that the results were going to be used for research purposes. They authorized all data processing for this purpose.

3.3. Location

The test took place at the beach of Los Pozos in the town of Puerto del Rosario at Fuerteventura Island (Spain). The temperature outside ranged between 24° and 27°, with sunny weather. The sea appeared in a calm state with no waves and no wind and the water temperature was between 16° and 18°. This means the designation of “calm” in the scale of Beaufort and “flat” in the scale of Douglas, without significant variations that could have affected the results of the study.

3.4. Design

After a demonstration phase, but without allowing the possibility to practice before the test, each participant had to perform two approaches to the place marked with a striking colour floating buoy, which belonged to the town's lifeguard service and was easily visible. The buoy was placed in a distance of 100 metres from the shore, measured by GPS.

The first approach was standard, without using any material and performing the fastest swim style, and the second one was experimental, using the AIRSUPRA board without paddle. The order of performance of the lifeguards was random and anyone chose freely the technique, for swimming and the board. In order to avoid the fatigue effect, participants had a resting time of 30 minutes between each approach. Before conducting the second approach, with the AIRSUPRA board, the participants were asked if their physical conditions were optimal to meet the second test.

3.5. Characteristics of the AIRSUPRA board

The “*Air Surf Rescue*” was the AIRSUPRA board used. It has an ergonomic design with fastening lines along the board. It is made in high resistance PVC *Dropstitch*, with fabrics joined together by the spray technology that ensures

greater bonding between the layers. This provides sufficient rigidity and durability to allow the use standing (*stand up paddle* style), kneeling or lying.

The measures are the following (Figure 2):

- 325 centimetres long.
- 76 centimetres wide.
- 10,7 centimetres thick.
- 195 litres of volume.
- 5 kilograms of weight (already prepared and inflated).

Figure 2. Air SUPRA board ready to be used.



3.6. Statistical analysis

The statistical package SPSS for Windows, version 19, was the program used for the statistical analysis. The following tests were performed:

- For the analysis of the continuous variables, the t test was used for related samples. Each life guard rescuing time with and without board was compared.
- The variables describe the use of measures of central tendency (average) and dispersion (standard deviation). A level of significance of $p < 0,05$ was considered for all the analysis.

4. RESULTS

Sixteen life guards participated in this study. They had an age of 32.44 ± 7.81 years, their height was 174.94 ± 7.76 cm and their weight was 75.81 ± 14.05 kg.

When life guards perform the approach with the AIRSUPRA board (TR1) they have a time of 54.13 ± 8.58 , and when they do not use any material (TR2) they have a time of 93.19 ± 25.52 (Figure 3), with a difference of 39.06 seconds, which is statistically significant ($p < 0.001$) (Table 1).

Table 1. Descriptive statistics of the simple and test T

		(n=16)		
Variables	Media	DT	IC	
Age ^a	32.44	7.81	28.27 – 36.60	
Height ^b	174.94	7.76	170.80-179.07	
Weight ^c	75.81	14.05	68.32-83.80	
Test	TR1	54.13	8.58	49.55 – 58.70
	TR2	93.19	25.52	79.59 – 106.79
	Sig	< 0.001		
	M	39.06	20.16	28.32-49.81

^a: Age in years; ^b: Height in cm; ^c: Weight Kg

TR1: Approaching time with Air SUPRA board.

TR2: Approaching time without board.

M. Improvement in seconds. DT = Typical deviation. IC = Confidence interval.

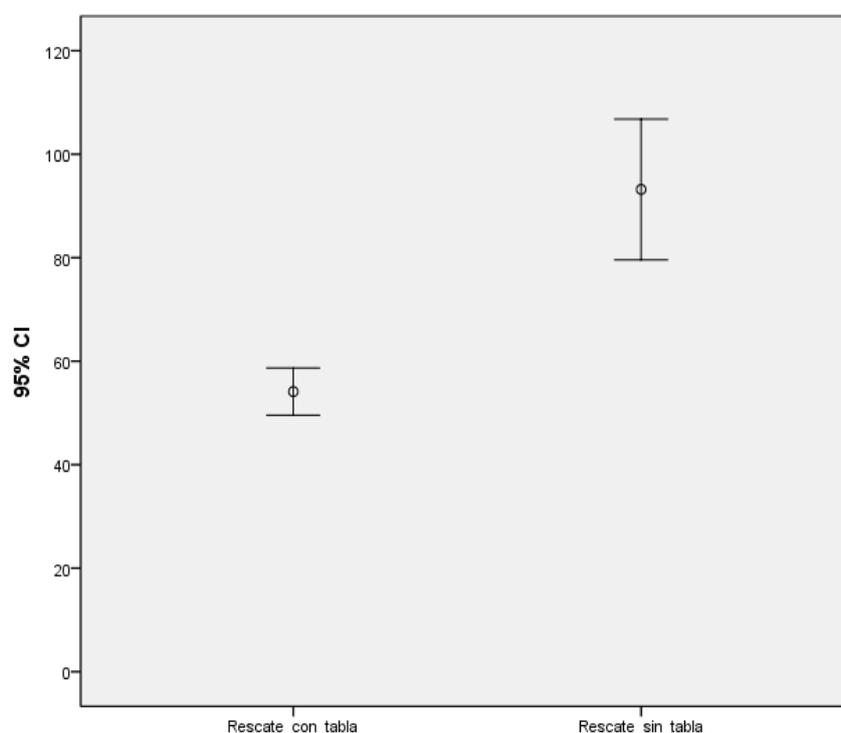


Figure 3. Differences between the approach with and without rescuing board.

5. DISCUSSION

The goal of this research was to test for the first time a little-known innovative rescue material, the AIRSUPRA board. There is not much evidence on how to face the approach to the person that needs rescuing. However, it is known that if the life guard does not use any material the quality of the CPR post-rescue it may get worse (15, 21). Another important factor is the physiological stress of the rescuer, since the accumulation of lactic acid and the subjective perception of effort (22) are high.

In this study life guards significantly improve the approaching time when using the ARISUPRA board, achieving better marks in 100 metres than when they do not use the board. The marks are also better with the AIRSUPRA board than when life guards use fins and the rescue tube in a 75 metres distance, as proved in another study conducted by the research groups GIAAS and REMOSS 12).

It has also been proved that when the AIRSUPRA board is used in the approach the differences between life guards with better and worse physical abilities are less than when the approach is made by swimming.

Why are these studies important and how can they help life guards?

About 400.000 people die in the world by drowning (2, 4, 5). Decisions about the most appropriate material should be based on scientific evidence, which is why the ERC proposes further research in this field (6). One of the key factors is to reduce the rescuing time to prevent the victim from sucking up water (3) and if possible perform the CPR ventilations in the water (6, 23). Although the goal of this study was not revival, the fast approach to the person to rescue and the buoyancy of the AIRSUPRA board may contribute to it.

5.1. Limitations of the study

This pilot study presents limitations that should be discussed. Life guards' inexperience using the AIRSUPRA board might be a limiting factor. A skilled person can improve the records and an inexperienced person may not have the appropriate skills for working with it in other sea conditions. The sample is small as it is a pilot study. The study was limited to the approach phase, so it is necessary to extend it in further researches that include the transfer phase. A simulated scenario is not comparable to a real situation.

5. CONCLUSIONS

The perfect material for lifesaving does not exist. However, there must be an effort to try to find it and an effort to always use a material that better ensures the safety of citizens. Of course it would be an advantage if the perfect material was also economically and environmentally affordable, as the AIRSUPRA board seems to be.

In lifesaving the approach to the victim phase is a decisive one, because reaching sooner to the place where he is may reduce negative consequences and, in some cases, avoid the death of the person in the emergency situation.

Initially, the advantages observed on the AIRSUPRA board are more and more important than its disadvantages. Furthermore, many of the disadvantages that life guards observe on the board are only ignorance and lack of theoretical and physical training, what also happens with other rescue materials (marpa, rescue boat, rescue jet ski or any other unknown material).

The use of the AIRSUPRA board improves the approaching time, which can help reduce the severity of the aquatic incident and even, in extreme cases, avoid the death of the person who is in limit situations. Moreover, it decreases lifeguards' fatigue and provides buoyancy for the victim from the time of contact.

A broader research that allows drawing conclusions based on scientific evidence and not only in the experts' opinions is necessary. This research is one of the future projects that the investigation groups GIAAS and REMOSS will try to carry out.

When lifeguards use the AIRSUPRA boards they do not use it to achieve sport scores, nor to enjoy surfing, they use it to optimize performance at work. They have a professional and humanitarian aim.

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