FEDERAZIONE ITALIANA NUOTO

# SALVAMENTO IN ACQUA

## I PRINCIPI DI BASE

Giorgio Quintavalle

# 370.000 morti per annegamento

## 3° CAUSA DI MORTE AL MONDO

- **AUSTRALIA:** l'annegamento è la prima causa di morte dovuta a eventi traumatici non intenzionali nei bambini di età compresa fra 1 e 3 anni;

- **BANGLADESH:** gli annegamenti causano il 43% di tutti i decessi nei bambini di età compresa fra 1 e 4 anni;

- **CINA:** l'annegamento è la prima causa di morte dovuta a eventi traumatici nei bambini di età compresa fra 1 e 4 anni;

- **STATI UNITI:** l'annegamento è la seconda causa di morte dovuta a eventi traumatici non intenzionali nei bambini di età compresa fra 1 e 14 anni.

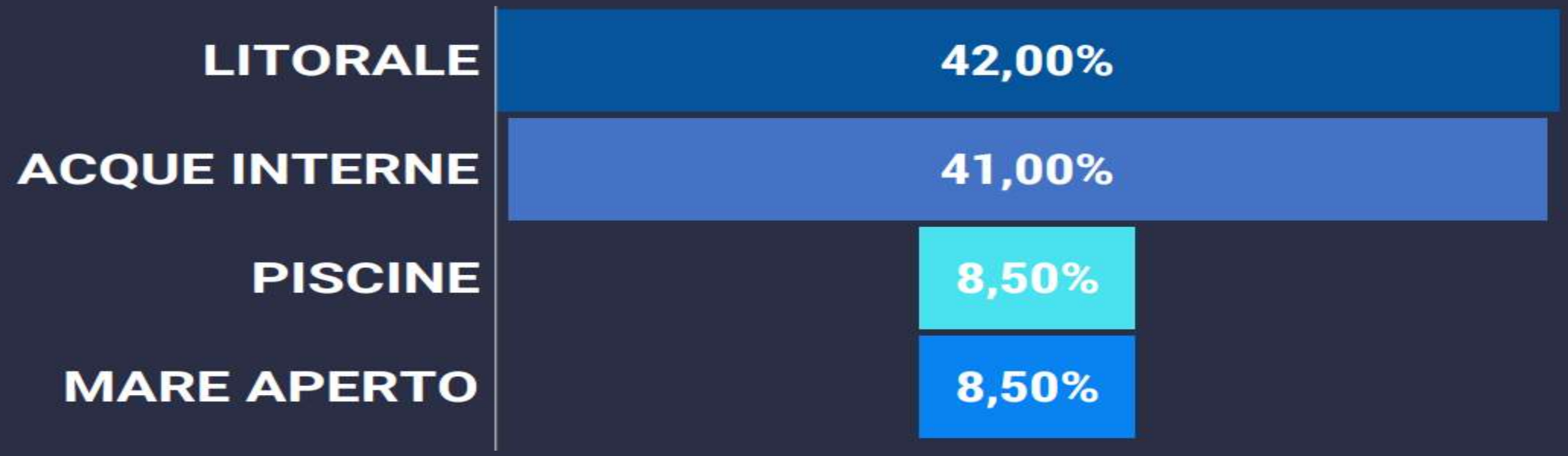
# ITALIA : circa 550 incidenti, di cui circa 400 fatali

| | |
|---|---|
| 25 – 29 Anni | 10,27% |
| 20 – 24 Anni | 10,15% |
| 80 + Anni | 8,45% |
| 75 – 79 Anni | 7,72% |

# RAPPORTO M:F

| 7:1 | 1,6:1 | 2,1:1 |
| --- | --- | --- |
| INCIDENTI FATALI | INCIDENTI NON FATALI | ACCESSO PRONTO SOCCORSO |

# ITALIA:
# 68% incidenti esito mortale o terapia intensiva



Assistente Bagnanti
**LIFEGUARDS**

Acque Interne (AB-IP)
**INLAND OPEN WATER LIFEGUARDS**

Piscina (AB-P)
**POOL LIFEGUARDS**

Ambiente Marino (AB-MIP)
**SURF LIFEGUARDS**

# PRINCIPI BASE PISCINA

## OSSERVAZIONE

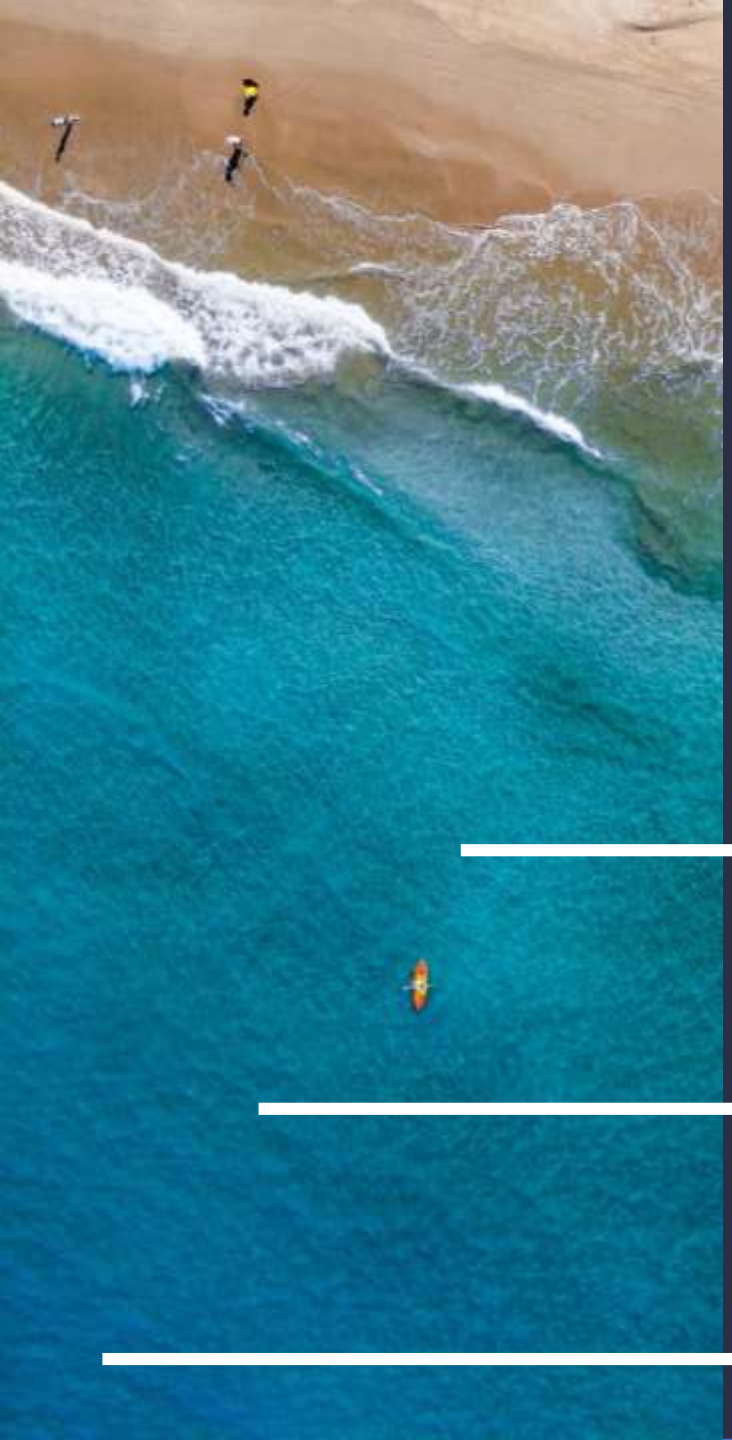
## ATTENZIONE - TURNOVER

## REGOLA 10/20



# PRINCIPI BASE MARE

Capacità natatorie
Sbalzi termici
Tuffi
Geomorfologia dei luoghi
Correnti
Venti





# PRINCIPI BASE MARE

## DISTANZA DALLA BATTIGIA

D. Gaeta UniPisa 2022

25 mt

50 mt

100 mt

# PRINCIPI BASE MARE

## DISTANZA DALLA BATTIGIA

25 mt

RESCUE TUBE

RESCUE BOARD

50 mt

RESCUE SUP

# PRINCIPI BASE MARE

## DISTANZA DALLA BATTIGIA

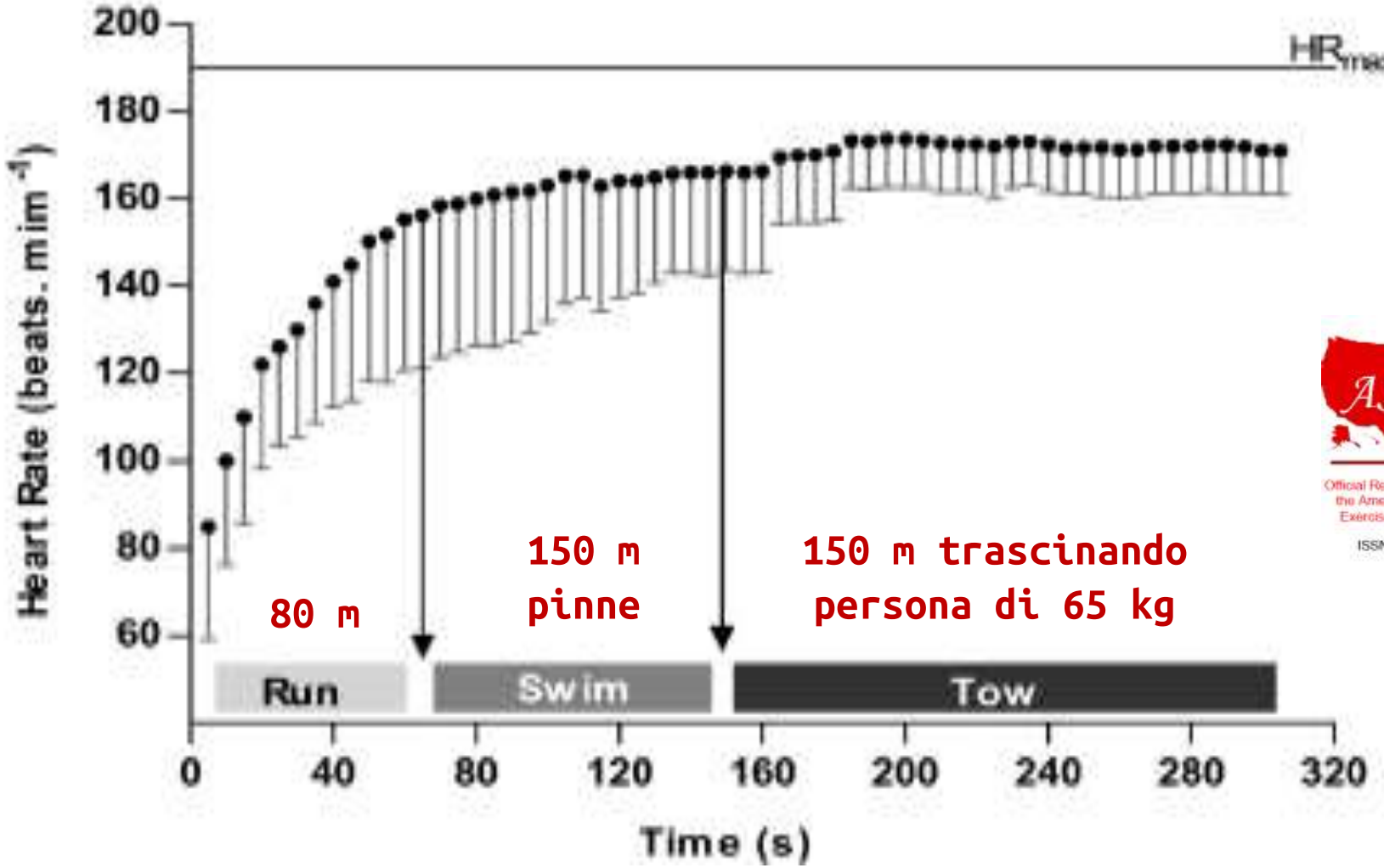
## 100 mt

NATANTE A REMI

MOTO D'ACQUA


IRB

*ador et al. J Exer Physiol, 2014*




ASEP
Official Research Journal of the American Society of Exercise Physiologists
ISSN 1097-9751

Journal of Exercise Physiology online
June 2014
Volume 17 Number 3

JEP online

**Physiological and Metabolic Responses to Rescue Simulation in Surf Beach Lifeguarding**

Amadeo F. Salvador[1], Rafael Penteado[1], Felipe D. Lisbôa[1], Rogério B. Corvino[1], Eduardo S. Peduzzi[2], Fabrizio Caputo[1]

Journal of Exercise Physiology online

June 2014
Volume 17 Number 3

Official Research Journal of the American Society of Exercise Physiologists

ISSN 1097-9751

JEP online

**Physiological and Metabolic Responses to Rescue Simulation in Surf Beach Lifeguarding**

Amadeo F. Salvador[1], Rafael Penteado[1], Felipe D. Lisbôa[1], Rogério B. Corvino[1], Eduardo S. Peduzzi[2], Fabrizio Caputo[1]

*"Therefore, it is likely that the rescue simulations in the present study were performed at or near maximal aerobic power due the exercise time (6 to 7 min), $[La]_{peak}$ (~13 mmol/l) and HR > 90% $HR_{peak}$."*

*Prieto Saborit et al. Ergonomics, 2010*

*"The objective was to examine the physiological response of 14 lifeguards in a pool simulation with 1.7 m waves."*

*"Test consisted of a rescue simulation in which each lifeguard had to swim a distance of 55 m to reach a victim in an unconscious state, who needed to be towed back in the opposite direction (a total of 110 m)."*

*"As in other studies, a distance of 55 m was chosen as this is considered the maximum distance that a lifeguard need to cover "*


Ergonomics
Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t713701117

**Physiological response of beach lifeguards in a rescue simulation with surf**

José Antonio Prieto Saborit[a]; Miguel del Valle Soto[a]; Vicente González Díez[b]; María Ángeles Montoliu Sanclement[c]; Paloma Nistal Hernández[a]; Jorge Egocheaga Rodríguez[a]; Luis Santos Rodríguez[a]
[a] School of Sports Medicine, University Oviedo, Catedrático Gimeno s/n, 33007, Oviedo, Spain [b] Medical Service of Cabo Peñas, Gozón, Asturias, Spain [c] Silicosis National Institute, Central Hospital Asturias, Spain

Online publication date: 24 August 2010


**Ergonomics**
Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t713701117

## Physiological response of beach lifeguards in a rescue simulation with surf

José Antonio Prieto Saborit[a]; Miguel del Valle Soto[a]; Vicente González Díez[b]; María Ángeles Montolíu Sanclement[c]; Paloma Nistal Hernández[a]; Jorge Egocheaga Rodríguez[a]; Luis Santos Rodríguez[a]
[a] School of Sports Medicine, University Oviedo, Catedrático Gimeno s/n, 33007, Oviedo, Spain [b] Medical Service of Cabo Peñas, Gozón, Asturias, Spain [c] Silicosis National Institute, Central Hospital Asturias, Spain

Online publication date: 24 August 2010

*ieto Saborit et al. Ergonomics, 2010*

Ergonomics
Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t713701117

**Physiological response of beach lifeguards in a rescue simulation with surf**

José Antonio Prieto Saborit[a]; Miguel del Valle Soto[a]; Vicente González Díez[b]; María Ángeles Montolío Sanclement[c]; Paloma Nistal Hernández[a]; Jorge Egocheaga Rodríguez[a]; Luis Santos Rodríguez[a]
[a] School of Sports Medicine, University Oviedo, Catedrático Gimeno s/n, 33007, Oviedo, Spain [b] Medical Service of Cabo Peñas, Gozón, Asturias, Spain [c] Silicosis National Institute, Central Hospital Asturias, Spain

Online publication date: 24 August 2010



Table 4. Temporal parameters of the performance group during the rescue operation.

| | Time spent swimming to victim without equipment (s) | Time spent swimming to victim with equipment (s) | Time spent towing without equipment (s) | Time spent towing with equipment (s) | Total rescue time without equipment (s) | Total rescue time with equipment (s) |
|---|---|---|---|---|---|---|
| Subject 1 | 41 | 45 | 97 | 89 | 138 | 134 |
| Subject 2 | 43 | 49 | 147 | 112 | 190 | 161 |
| Subject 3 | 57 | 60 | 126 | 98 | 183 | 158 |
| Subject 4 | 45 | 48 | 96 | 94 | 141 | 142 |
| Subject 5 | 48 | 74 | 110 | 105 | 158 | 179 |
| Subject 6 | 47 | 58 | 96 | 90 | 143 | 148 |
| Subject 7 | 44 | 47 | 125 | 115 | 169 | 162 |
| Subject 8 | 65 | 81 | 141 | 137 | 206 | 218 |
| Subject 9 | 43 | 45 | 87 | 79 | 130 | 124 |
| Subject 10 | 56 | 62 | 121 | 113 | 177 | 175 |
| Subject 11 | 44 | 48 | 111 | 94 | 155 | 142 |
| Subject 12 | 56 | 72 | 126 | 118 | 182 | 190 |
| Subject 13 | 43 | 46 | 104 | 100 | 147 | 146 |
| Subject 14 | 46 | 51 | 110 | 102 | 156 | 153 |
| Mean | 48.4 | 56.1 | 114.0 | 103.2 | 162.5 | 159.4 |
| SD | 7.1 | 12 | 17.7 | 14.7 | 22.4 | 24.5 |
| Level of significance of difference | $p < 0.001$ | | $p < 0.001$ | | NS | |

*ieto Saborit et al. Ergonomics, 2010*

*Prieto Saborit et al. Ergonomics, 2010*

*"Lactate levels (~10 mmol/l), heart rate (~175 bpm) and $VO_2$ (~3,4 ± 0.8 l/min, corresponding to about 85% of $VO_2$max) were similar with and without torpedo. "*

*"Results show that aquatic rescue makes considerable physiological demands on the lifeguard."*

**Secondo questi dati un $VO_2$max di 43 ml/kg/min è stato considerato il minimo necessario per un soccorso efficace.**


Ergonomics
Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t713701117

**Physiological response of beach lifeguards in a rescue simulation with surf**

José Antonio Prieto Saborit[a]; Miguel del Valle Soto[a]; Vicente González Díez[b]; María Ángeles Montoliu Sanclement[c]; Paloma Nistal Hernández[a]; Jorge Egocheaga Rodríguez[a]; Luis Santos Rodríguez[a]
[a] School of Sports Medicine, University Oviedo, Catedrático Gimeno s/n, 33007, Oviedo, Spain [b] Medical Service of Cabo Peñas, Gozón, Asturias, Spain [c] Silicosis National Institute, Central Hospital Asturias, Spain

Online publication date: 24 August 2010

*"A total of 52 lifeguards (44 men, 8 women) participated in the study (26 ± 3.3 years; 75.9 ± 9.3 kg; 178 ± 3.2 cm). The inclusion criteria were at least two years of seniority and not having been out of work for the past 6 months for situation that could alter one's physical condition."*

*"The lifeguards' VO2max values were measured during treadmill stress tests (cut-off 43 ml/kg/min). A fitness assessment questionnaire was used to obtain the Subjective Appraisal of Aerobic Capacity."*

International Journal of Occupational Safety and Ergonomics

ISSN: 1080-3548 (Print) 2376-9130 (Online) Journal homepage: http://www.tandfonline.com/loi/tose20

Impact of Error Self-Perception of Aerobic Capacity in the Safety and Efficacy of the Lifeguards

Jose A. Prieto, Paloma Nistal, David Méndez, Cristian Abelairas-Gomez & Roberto Barcala-Furelos

*to et al. Int J Occup Saf Ergon, 2016*

*"In total, 94% of the lifeguards who obtained a VO2max value below 43 ml/kg/min (32 on 50) considered their aerobic capacity to be normal, high or very high".*

*"This self-perception error of true aerobic capacity could lead to premature fatigue during a rescue, endangering both the lifeguard's life and the life of the victim".*

*"These data may help lifeguards to become aware of the need to know their true physical conditions through testing and structured training programs."*


International Journal of Occupational Safety and Ergonomics
ISSN: 1080-3548 (Print) 2376-9130 (Online) Journal homepage: http://www.tandfonline.com/loi/tose20

Impact of Error Self-Perception of Aerobic Capacity in the Safety and Efficacy of the Lifeguards

Jose A. Prieto, Paloma Nistal, David Méndez, Cristian Abelairas-Gomez & Roberto Barcala-Furelos

*Claesson et al. Am J Emerg Med, 2011*

***"40 surf lifeguards (65% men; age, 19-43 years) performed single-rescuer CPR for 10 minutes on manikin. The test was repeated with an initial simulated surf rescue on an unconscious 80-kg victim 100 m from the shore."***

**Table 1** Time during surf rescue

| | All (n = 40) | Men (n = 26) | Women (n = 14) | Women - Men (95% CI)[a] | $P$[b] |
|---|---|---|---|---|---|
| Beach to victim 0-100 m | 83 ± 14 | 78 ± 13 | 90 ± 14 | 12 (3 to 20) | .01 |
| Victim to ventilations 100-50 m | 72 ± 19 | 69 ± 18 | 78 ± 19 | 9 (−4 to 21) | .15 |
| Beach to ventilations 0-100-50 | 155 ± 31 | 148 ± 29 | 168 ± 31 | 20 (0 to 41) | .048 |
| Victim to start of CPR 100-50-0 m | 176 ± 33 | 165 ± 26 | 196 ± 35 | 31 (12 to 51) | .003 |
| Ventilations to start of CPR 50-0 m | 104 ± 24 | 96 ± 18 | 118 ± 26 | 23 (8 to 37) | .003 |
| Total time 0-100-50-0 m | 258 ± 44 | 243 ± 34 | 286 ± 46 | 43 (17 to 69) | .002 |

Time intervals and delay during surf rescue in calm conditions. Men were significantly faster in all intervals except for victim to ventilations (100-50 m). Values are mean times (seconds) ± SD.

[a] Mean difference between women and men, with corresponding 95% confidence interval.

[b] $P$ value for the difference between women and men.

American Journal of Emergency Medicine (2011) 29, 1044–1050

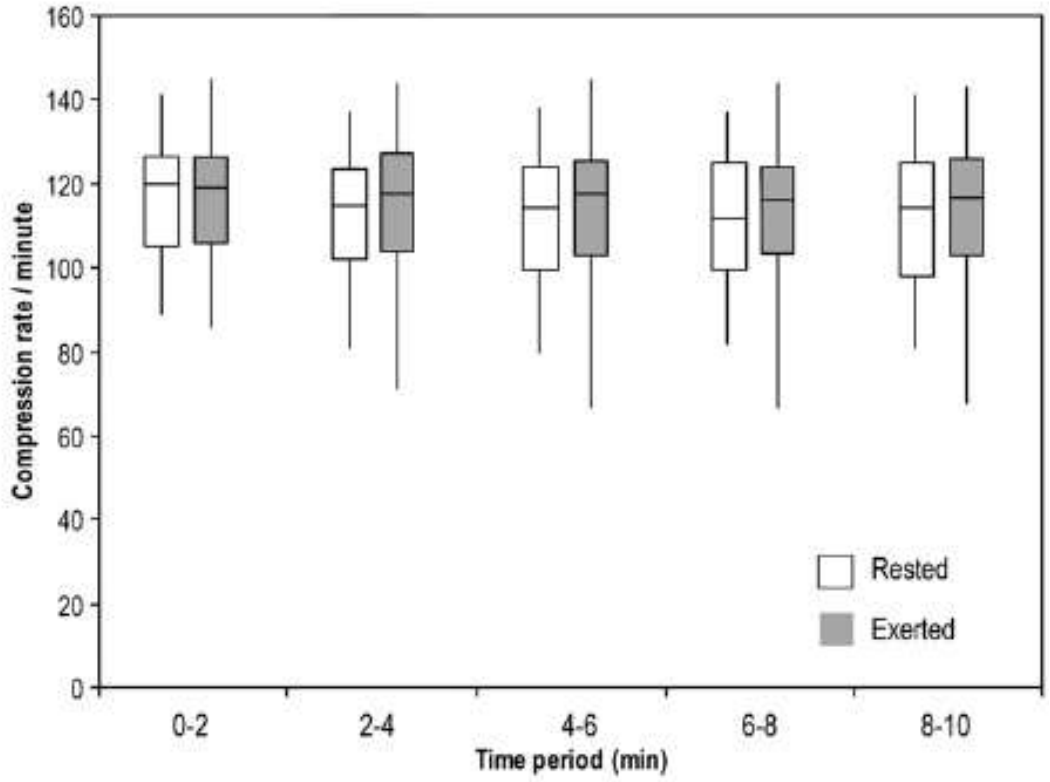
ELSEVIER

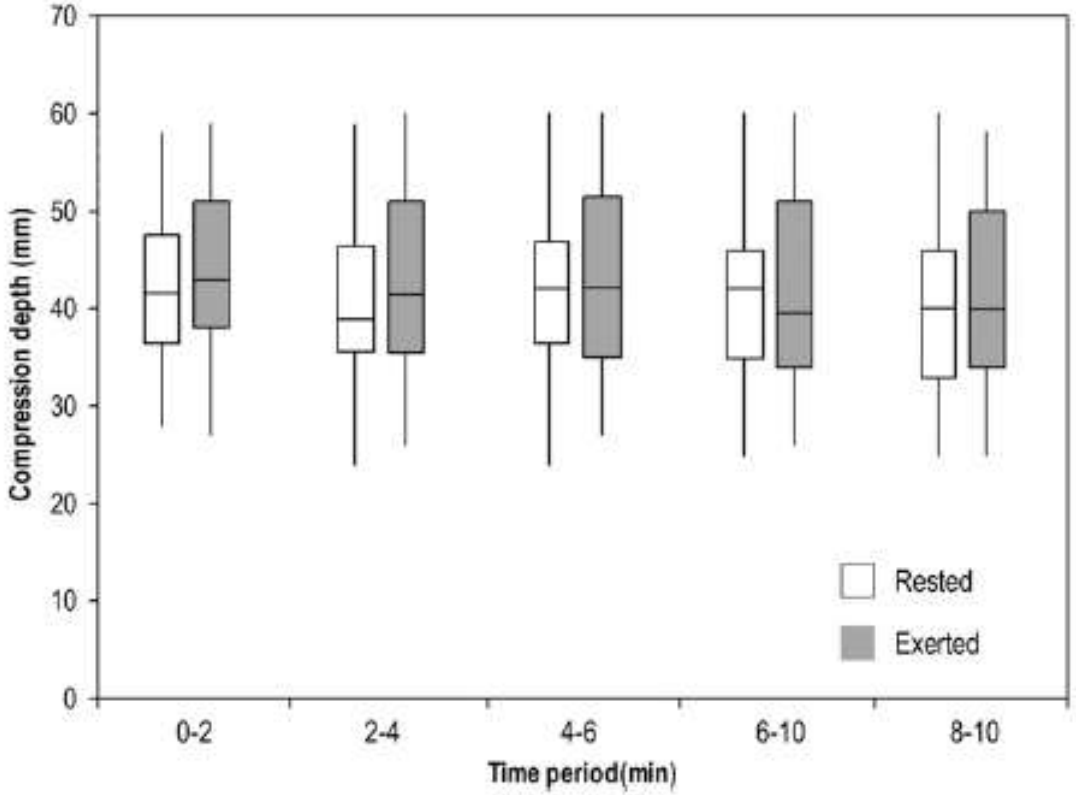
Original Contribution

**Delay and performance of cardiopulmonary resuscitation in surf lifeguards after simulated cardiac arrest due to drowning**

Andreas Claesson RN[a,*], Tomas Karlsson[b], Ann-Britt Thorén PhD[c], Johan Herlitz MD[d]

*Claesson et al. Am J Emerg Med, 2011*




ELSEVIER

The American Journal of Emergency Medicine

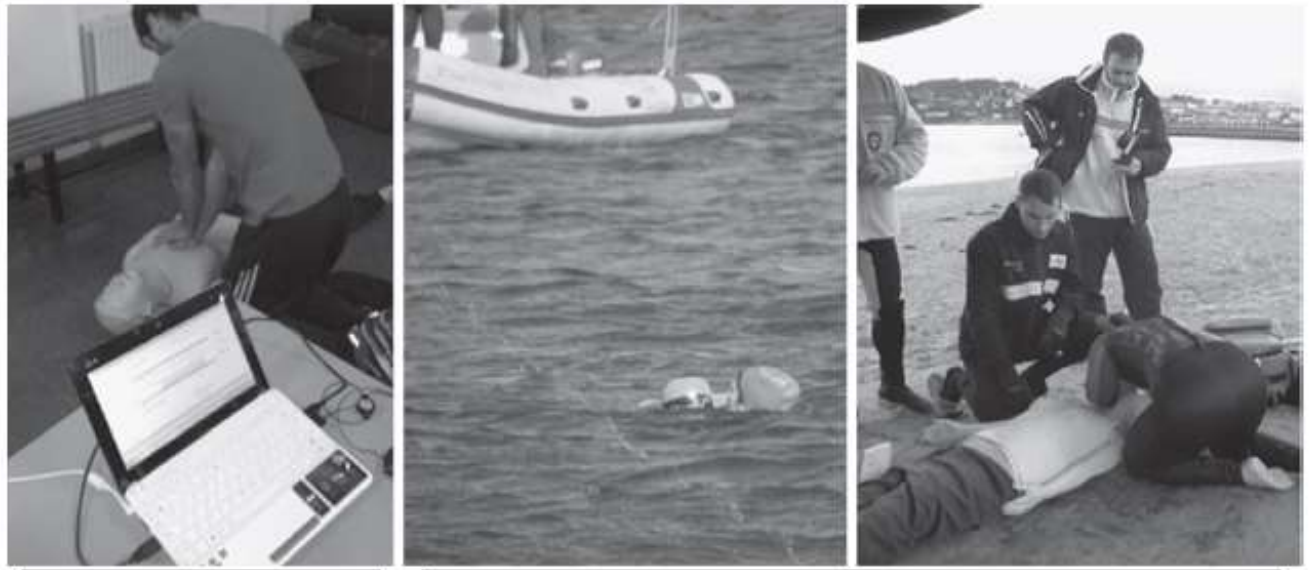
Original Contribution

**Delay and performance of cardiopulmonary resuscitation in surf lifeguards after simulated cardiac arrest due to drowning**

Andreas Claesson RN [a,*], Tomas Karlsson [b], Ann-Britt Thorén PhD [c], Johan Herlitz MD [d]

*Barcala-Furelos et al. Am J Emerg Med, 2016*

***To study the influence of the fatigue caused by a water rescue on the cardiopulmonary resuscitation (CPR) performance, 60 lifeguards (30 men) conducted two tests:***
***1) 5 min of CPR rested, and 2) 5 min CPR exhausted after water rescue***



T1 – CPR *rested*

T2 – Water rescue and CPR *exhausted*

Contents lists available at SciVerse ScienceDirect
American Journal of Emergency Medicine
journal homepage: www.elsevier.com/locate/ajem

Original Contribution

Effect of physical fatigue on the quality CPR: a water rescue study of lifeguards
Physical fatigue and quality CPR in a water rescue☆

Roberto Barcala-Furelos PhD [a], Cristian Abelairas-Gomez Ph [a,*], Vicente Romo-Perez PhD [a], Jose Palacios-Aguilar PhD [b]

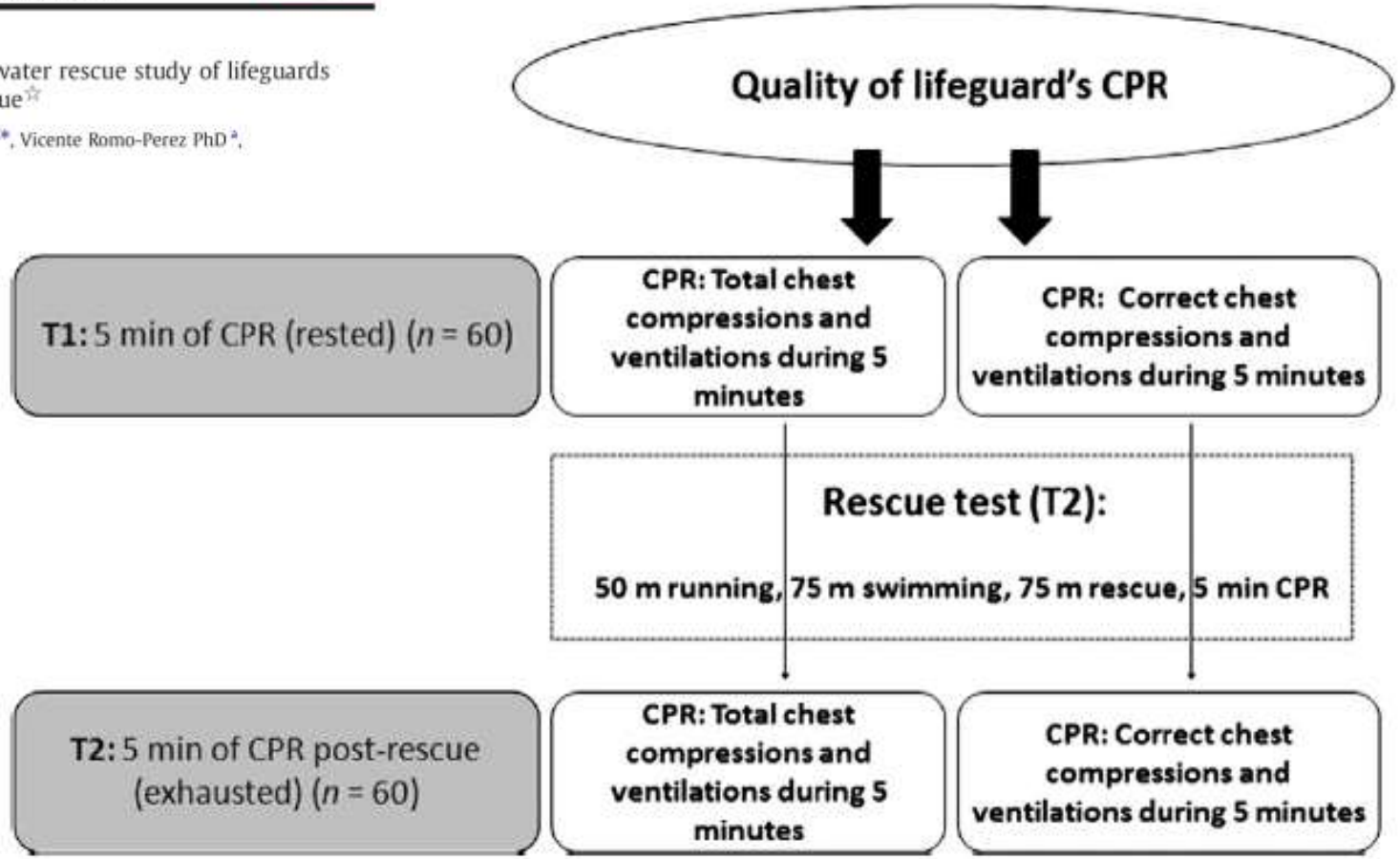
*Barcala-Furelos et al. Am J Emerg Med 2016*

Contents lists available at SciVerse ScienceDirect
American Journal of Emergency Medicine
journal homepage: www.elsevier.com/locate/ajem

Original Contribution

# Effect of physical fatigue on the quality CPR: a water rescue study of lifeguards
## Physical fatigue and quality CPR in a water rescue☆

Roberto Barcala-Furelos PhD [a], Cristian Abelairas-Gomez Ph [a,*], Vicente Romo-Perez PhD [a], Jose Palacios-Aguilar PhD [b]



*Barcala-Furelos et al. Am J Emerg Med 2016*

Contents lists available at SciVerse ScienceDirect
American Journal of Emergency Medicine
journal homepage: www.elsevier.com/locate/ajem

Original Contribution

Effect of physical fatigue on the quality CPR: a water rescue study of lifeguards
Physical fatigue and quality CPR in a water rescue☆

Roberto Barcala-Furelos PhD [a], Cristian Abelairas-Gomez Ph [a,*], Vicente Romo-Perez PhD [a], Jose Palacios-Aguilar PhD [b]

**Table 3**
Univariate analysis for the variables associates with differences between rested/exhausted

| Variables | Rested | | Exhausted | | *t* test | |
|---|---|---|---|---|---|---|
| | M | SD | M | SD | *t* | *P* |
| TCC | 380 | 38.64 | 411 | 56.09 | −4.86 | <.001 |
| CCC | 285 | 82.67 | 246 | 122.08 | 2.31 | .02 |
| TBR | 24 | 2.97 | 26 | 3.92 | −3.08 | <.001 |
| CBR | 14 | 7.09 | 9 | 6.67 | −5.27 | <.001 |

TTC: compressioni totali
TBR: insufflazioni totali efficaci

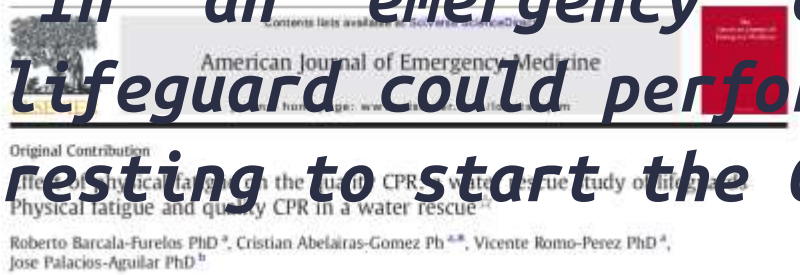
CCC: compressioni efficaci
CBR: insufflazioni

*Barcala-Furelos et al. Am J Emerg Med, 2016*

*"The quality of CPR done by lifeguards is not that great, but, when they are performing a rescue, it is significantly worse."*

*"Lifeguards should also train CPR under fatigue conditions in order to improve the survival for the victims of cardiac arrest."*

*"In an emergency case with favorable conditions, one lifeguard could perform the rescue and the other one could be resting to start the CPR."*


American Journal of Emergency Medicine

Original Contribution

Physical fatigue and quality CPR in a water rescue

Roberto Barcala-Furelos PhD, Cristian Abelairas-Gomez Ph, Vicente Romo-Perez PhD, Jose Palacios-Aguilar PhD

Chiunque non sappia nuotare può imparare

Chiunque sappia nuotare può diventare un buon nuotatore

Tutti i buoni nuotatori possono diventare soccorritori acquatici

**Chiunque può diventare un soccorritore acquatico**

# SALVAMENTO IN ACQUA

## PRINCIPI DI BASE

Grazie per l’attenzione