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An evaluation of a community knowledge-based intervention on beach safety: The Science of the Surf (SOS) Presentations



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Background



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Science of the Surf (SOS) seminars began in 2001 to improve community awareness of beach safety and the rip current hazard



Over **25,000** adults, primary and high school students have seen the presentation; received numerous awards

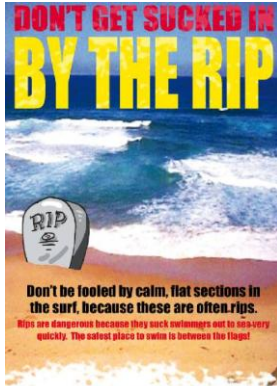


Background




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SOS was the motivation for a 2007-2009 Australian Research Council (ARC) grant awarded to UNSW and SLSA



- Development and evaluation of an intervention to reduce rip current related beach drowning
- Beachgoers' beliefs and behaviours in relation to beach flags and rip currents
- 'Why were you swimming there?' - analysis of risky swimming behaviour
- Comparison of attitudes and knowledge of beach safety for Australian beachgoers, rural residents and international tourists



Study Aims



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Philosophy of SOS presentation is to educate the public by providing an understanding of rip currents using science and **visual media**



How effective is this method?

Research Question: *Does a community-based lecture improve the knowledge of beachgoers about the risk and presence of rip currents and influence where they will swim?*



Methods: Talks & Surveys



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11 Science of the Surf lectures given in Jan/Feb 2009 at various beachside locations in Sydney, Australia

- 5 talks had **live rip current demonstration** using purple dye
- Other 6 only showed images of dye releases

Attendees asked to participate in **pre-** and **post-talk** surveys

- 383 participants; 200 from dye demo; 183 from non-dye demo
- 121 participants completed follow up survey (32%)

A control group of people (n = 179) who did not see the talks were given pre-lecture survey on nearby beaches



Methods: Survey Design



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Surveys consisted of:

1. Demographic Information
2. General Beach Safety Knowledge
3. Rip Current Knowledge/Identification
4. Swimming Behaviour



Post-lecture surveys targeted **knowledge retention** from lecture

Follow-up survey 1-week later by email



Results: Participants



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CHARACTERISTIC	TALKS	CONTROL
Locals	79.6 %	49.4 %
Elsewhere in Sydney	17.2 %	42.8 %
Females	54.4 %	61.6 %
Major Age Group	49.1 % = 30-49 yo	47.6 % = 20-29 yo
Beach/Swim Freq	32.1 % < 1-2 week	57.6 % > 2-3 week
Swim Ability	L/M/H \approx 30 %	M + H = 75 %
Lifesavers	4.2 %	5.6 %
Surfers	22.2 %	26.8 %



Results: Pre-Talk vs Control



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Pre-Talk group **more aware** of beach safety factors

Beach Safety Factor	Pre-Talk	Control
Not swim at a beach because (%)	<i>n</i> =379	<i>n</i> = 178
<i>Unpatrolled</i>	46.2	23.6
<i>Unsafe</i>	78.4	52.8
Check hazards before swimming (%)	<i>n</i> =377	<i>n</i> =178
<i>Rip currents</i>	57.7	49.4
<i>Dumping waves</i>	63.0	37.1

Pre-Talk group more knowledgeable about rip currents

Rip Current Knowledge	Pre-Talk	Control
Rip current description (%)	<i>n</i> =383	<i>n</i> = 179
<i>Calm water (breaking waves either side)</i>	62.4	46.4
<i>Rippled water</i>	24.3	12.3
<i>Darker water</i>	36.0	12.8
<i>Foam/debris moving out to sea</i>	37.3	22.3
Do rips pull you under? (%)	<i>n</i> =368	<i>n</i> =174
<i>Yes</i>	57.7	49.4

Both groups shown these pictures:



Patrolled with beach flags (no rip)



Unpatrolled with rip current



Results: Pre-Talk vs Control



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Pre-Talk group more likely to swim between flags

Choice of Swim Location/Rip Identification	Pre-Talk	Control
Picture of beach flags/rip current (%)	<i>n</i> =377	<i>n</i> = 179
<i>Chose correct swim location</i>	77.5	67.6
Picture of rip current and no flags (%)	<i>n</i> =372	<i>n</i> =167
<i>Chose correct swim location</i>	67.0	41.6
<i>Correct rip current identification</i>	56.7	35.3

Pre-Talk group more likely to swim in safer area and identify rip current in absence of beach flags



Results: Pre- vs Post-Talk



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Significant improvements in beach safety behaviour

Beach Safety Factor	Pre-Talk	Post-Talk
Not swim at a beach because (%)	<i>n</i> =376	<i>n</i> = 376
<i>Unpatrolled</i>	46.5	55.6
<i>Unsafe</i>	78.5	85.4
<i>Inconvenient</i>	53.7	38.8
Check hazards before swimming (%)		
<i>Rip currents</i>	57.8	96.8
<i>Dumping waves</i>	63.1	85.9
<i>Shallow sandbars and rocks</i>	48.5	82.5

Significant improvements in rip current knowledge

Rip Current Knowledge	Pre-Talk	Post-Talk
Rip current description (%)	<i>n</i> =378	<i>n</i> = 378
<i>Calm water (breaking waves either side)</i>	62.7	86.0
<i>Rippled water</i>	24.3	63.0
<i>Darker water</i>	36.2	92.6
<i>Foam/debris moving out to sea</i>	37.3	71.4
Do rips pull you under? (%)	<i>n</i> =358	<i>n</i> =358
<i>No</i>	57.5	98.9

Significant improvements in rip current knowledge

Participants ability to **identify rips** in photos improved after seeing talk





Results: Pre- vs Post-Talk



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Significant improvements in rip current knowledge



Pre-Talk ≈ 50% correctly identified rips in at least 3/4 photos

Post-Talk = 88%



Results: Pre- vs Post-Talk



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Significant improvements in rip current knowledge

Choice of Swim Location/Rip Identification	Pre-Talk	Post-Talk
Picture of beach flags/rip current (%)	<i>n</i> =366	<i>n</i> = 366
<i>Chose correct swim location (between the flags)</i>	77.6	65.3
Picture of rip current and no flags (%)	<i>n</i> =359	<i>n</i> =359
<i>Correct swim location</i>	67.0	93.0
<i>Correct rip current identification</i>	57.4	89.4
<i>Can't tell</i>	28.1	0.3

Some evidence of increased confidence in swimming outside of patrolled areas



Results: Follow-Up

(1 week later; n = 121)



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Who was keen to do the follow-up?

→ females, age group 30-39, swimmers of moderate ability

Variable	Pre	Post	Follow Up
Not swim because unpatrolled (%)	49.2	55.8	57.0
Not swim because inconvenient (%)	56.8	37.5	59.5
Check for rip currents (%)	55.8	95.9	98.3
Didn't know what rip looked like (%)	23.1	0.0	0.0
Rips look like darker water/gaps (%)	30.6	91.7	83.2
Correct identification of rip in photo (%)	55.9	94.0	76.8
Chose correct swim location no flags (%)	63.2	97.5	88.3
Chose correct swim location with flags (%)	76.7	62.4	52.6



Conclusions



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1. The Science of the Surf Presentations are an **effective intervention** for increasing beachgoer knowledge of rip currents and other beach/surf hazards in the short-term

→ *implications for value of more visual-based and science focussed beach safety presentations*

→ *people need 'top ups' of this information*

2. Some evidence of increased confidence in swimming outside of lifeguard patrolled areas....oops.



Acknowledgements



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If someone wants to fly me around the world giving my Science of the Surf talks, I won't say no.

THANK YOU