

# Intro

# Intro

- Conflict has become a recognizable problem in outdoor recreation since the 1960's (Schneider, 2000).
- Conflict is affected by :
  - the meaning individuals give to the activity (activity style),
  - the importance of the resource to the individual (resource specificity),
  - the level of focus of the individual on the environment or activity (mode of experience)
  - the user's acceptance of different lifestyles (lifestyle tolerance) (Vaske et al., 2000).

# Intro

- Past studies have found that:
  - potential for conflict increases when new interest groups, share the same resource with traditional recreationists (Vaske et al., 2000).
  - as self reported skill level increased the conflict levels inside and outside activity group increased as well
  - out-group conflict was higher than in-group conflict. (Vaske et al., 2004)

# Intro

- Conflict may also be affected by safety concerns of involved groups when multiple groups are sharing the same space, such as swimmers and surfers using the same beaches (Vaske et al., 2000).
- With an estimated five million visitors to local NH beaches in the summer months alone, it seems likely that some conflict may exist.

# Intro

- Recent newspaper articles have confirmed there is an increase in popularity of surfing in New Hampshire and the near coast
  - “Portsmouth Herald” reported surfing has definitely grown in popularity on the New England coast and is great for people of all ages
  - *The Wire* highlights a Yorks Beach manager discussing how surfing has become a mainstream sport on Maine’s coasts and how he recognizes the need to accommodate surfers. It also talks about how due to the increases, expansions to the beach’s surfing zone and a surfing zone addition have been proposed

# Intro

- Another article depicts recent management trends:
  - Rotating Beaches
    - Certain areas/times for surf only (rotates daily)
  - No zones
    - No regulation at all
  - ‘Go with the flow’
    - Evaluate daily settings/surroundings for best use

# Research Questions

- What are the current swimmer/surfer evaluations of conditions at North Beach and Jenness Beach?
- What is the PCI of surfers and swimmers pertaining to 5 proposed management options?
- What are the different PCI scores across beach locations, user types, skill levels, and time of use?

# Research Questions Cont'd

- Are there differences in perceived conflict between swimmers and surfers?
- As self-reported skill level increases, do PCI scores also increase?

# PCI

- The PCI is an instrument that can be used to evaluate the acceptability of management options and illustrate individuals' attitudes toward management or behavioral aims regarding participation in an activity (Vaske, Needham, Newman, Manfredi, & Petchenik, 2006).

# Background

- Traditionally, natural resource management in North America emphasizes the use of scientific information in decision making
  - Can lead to misinterpretation by managers
- Developed by Manfredo, Vaske, and Teel in 2003.
- Originally developed for wildlife research
  - Has potential for multiple uses and applications

# What is the PCI?

- A technique for relaying statistical information accurately and rapidly.
  - increased comprehension of data leads to better use of data
- Places the findings in the context of managerial concern
- Highlights which potential management actions would be most accepted and which ones would be met with the most opposition

# How does it work?

- Indicates the ratio of scoring on either side of the center point on a rating scale
- Formula requires a neutral (0) point with equal number of responses on either side.
- The data is entered into a formula which produces the PCI score.

# How does it work?

- Formula:

$$PCI = \left[ 1 - \frac{\sum_{i=1}^{n_a} |X_a|}{X_t} - \frac{\sum_{i=1}^{n_u} |X_u|}{X_t} \right] \times \frac{X_t}{Z}$$

- PCI= Potential for Conflict Index
- $X_a$  = an individual's 'acceptable' score
- $n_a$  = all individuals with acceptable scores
- $X_u$  = an individual's 'unacceptable' score
- $n_u$  = all individuals with unacceptable scores
- $Z$  = the max possible sum of all scores ( $Z=3n$  when  $n$  = total number of subjects)

# How does it work?

- Greatest possibility of conflict occurs when there is a bimodal distribution between the two extreme values of the response (PCI=1)
- No conflict occurs when 100% of the distribution falls on one side of the neutral point (PCI =0)
- The closer a PCI falls to 1.0, the higher the degree of conflict of that management option. The closer it falls to 0.0, the lower the degree of conflict.

# How does it work?

- Once the data is computed the results are displayed on bubble graphs
- The size of the bubble shows the PCI and indicates the degree of dispersion
  - Small bubbles= less potential conflict
  - Large bubbles= more potential conflict
- Location of center of bubble on chart represents mean score and skewness within distribution

# Methods

- Data collection June-August 2009
  - 239 individuals asked to participate
  - N=205; response rate: 87%
- 26 question survey
  - Beach use characteristics
  - Evaluations of management options
  - Demographics

# Results

Descriptive Statistics

# Overall – Entire Sample

- 123 female respondents and 77 male respondents (n=205)
- average age was 41 (M= 41.399)
- 24 swimmers, 44 surfers and 136 beach users
- participated one or less times a week (46.8%).  
average skill level of surfers and swimmers was intermediate (M=2.28, 44.1%)

# Overall

- Mean years of participation = 23 years
- Average self-reported time spent at:
  - Jenness Beach (48%)
  - North Beach (44%)
  - Other beaches (10%)

# Overall

- Seasonal visitation average percentages:
  - Summer (75.53%)
  - Fall (10.85%)
  - Spring (8.02%)
  - Winter (2.84%)

# Jenness Beach

- N=108
- 66 female and 41 male respondents
- average age was 39 (M= 39.257, Std. Dev= 14.848).
- 12 swimmers, 40 surfers and 55 beach users.
- The majority of users participated one or less times a week (43.5%) followed by 1-2 times a week (32.4%).

# Jenness

- The average skill level
  - expert (34.3%)
  - intermediate(27.8%) (M=2.8173) (RUN DATA FOR ONLY SWIM AND SURF HERE).
- Average years of experience was around 18 years (M=17.943, Std. Dev= 14.229).
- The majority of respondents found their Jenness beach location to be important (30.6%) followed closely by extremely important (27.8%).

# North Beach

- N=97
- 57 female and 36 male respondents (missing=4)
- Mean age = 44 years
- 12 swimmers, 4 surfers, and 81 beach users
- 50.5% participated in their main activities one or less times a week

# North Beach

- average self-reported skill level was expert (RUN DATA FOR ONLY SWIM AND SURF HERE)(46.4%)
- On average, participants had about 28 years (M= 27.8495, Std. Dev= 16.007) of experience
- The majority of respondents (30.9%) considered their North Beach location to be very important

# Swimmers

- N=24
- 16 female and 7 male swimmers
- average age was around 46 (M= 45.83)
- Swimmers participated in their activity 1-2 times a week on average (37.5%)
- Skill levels
  - intermediate skill levels (33.3%)
  - expert (29.2%).
- 50% Jenness, 50% North Beach
- The majority of swimmers considered their specific locations to be extremely important to them (of extreme importance to them)(37.5%).
- Average years of experience 27 years (M= 26.695).

# Surfers

- N=44
- 21 female and 23 male surfers
- average age was around 34 (M= 34.357).
- Surfers participated in their activity 1-2 times a week on average (38.6%)
- 50% were at an intermediate skill level.
- Jenness Beach (90.9%) ,North Beach (9.1%)
- Most surfers considered their specific location to be extremely important (34.1%).

# Results

PCI Analysis

# Overall

- Allow surfers and swimmers to use the same water at the same time=
- Increase the swim area and decrease the surf area=
- Decrease the swim area and increase the surf area=
- Establish certain times of free reign=
- Leave current practices as they are=

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# Beach users

- Allow surfers and swimmers to use the same water at the same time=
- Increase the swim area and decrease the surf area=
- Decrease the swim area and increase the surf area=
- Establish certain times of free reign=
- Leave current practices as they are=

# Jenness

- Allow surfers and swimmers to use the same water at the same time=
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# North Beach

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# Surf and Swim

- Allow surfers and swimmers to use the same water at the same time=
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# Beginner

- Allow surfers and swimmers to use the same water at the same time=
- Increase the swim area and decrease the surf area=
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- Establish certain times of free reign=
- Leave current practices as they are=

# Inter

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# Adv

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- Establish certain times of free reign=
- Leave current practices as they are=

# Exp

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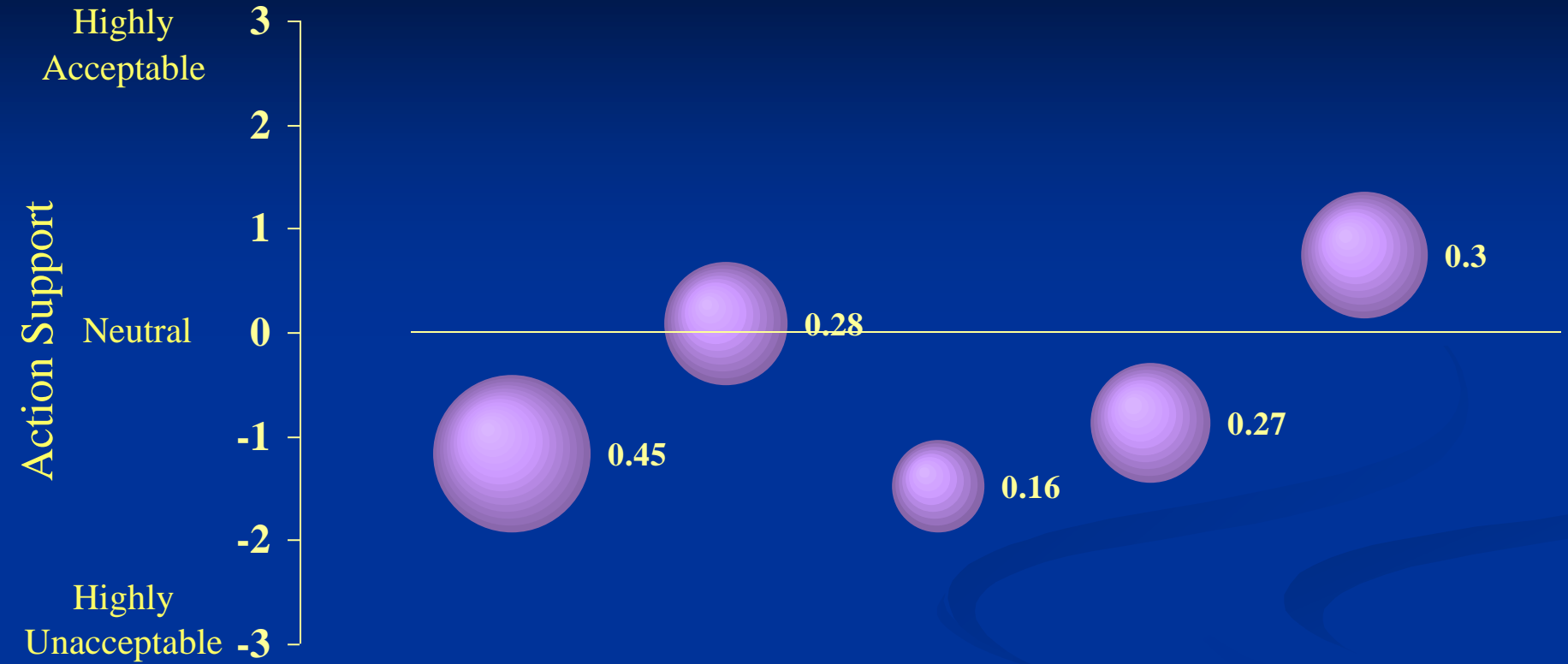
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# Individual Groups

# Swimmers Response



Surf/Swim at  
same time

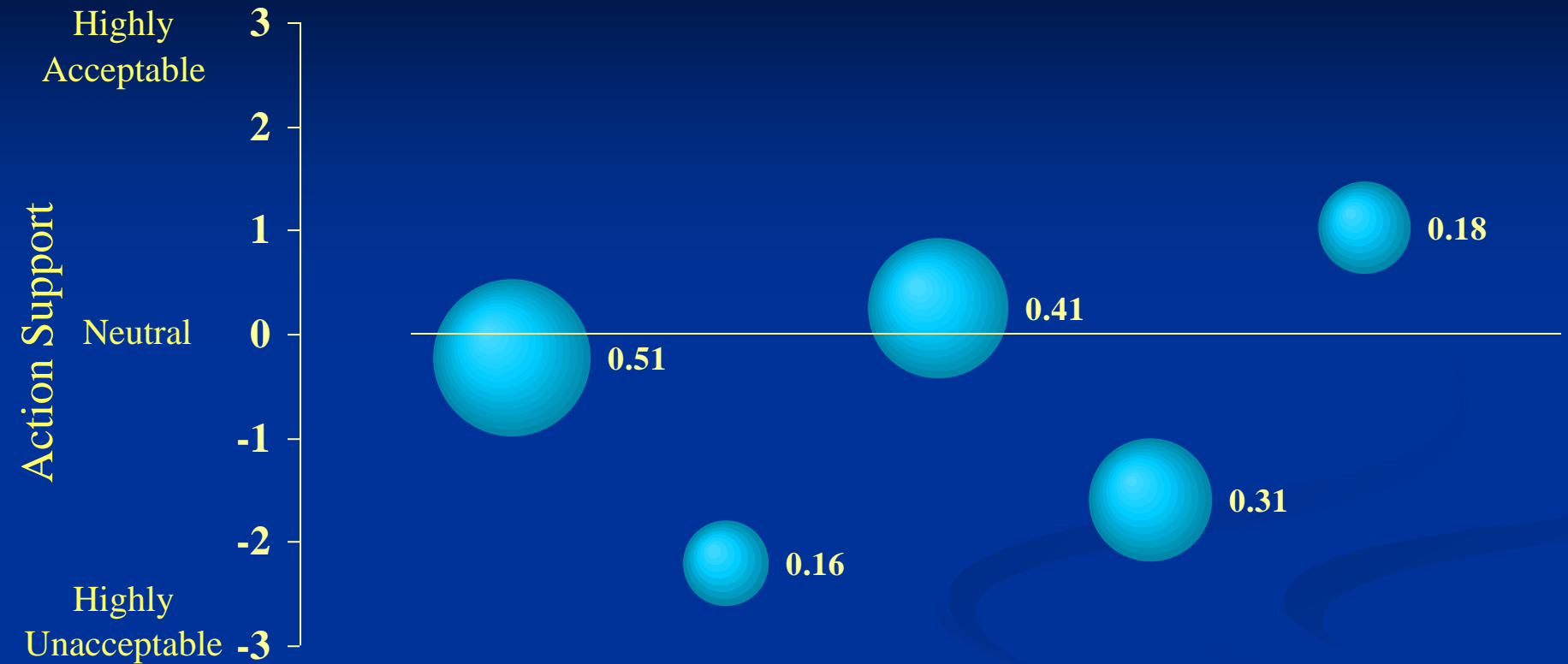
↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

Times of  
free reign

Current practices  
stay the same

# Surfers Response



Surf/Swim at  
same time

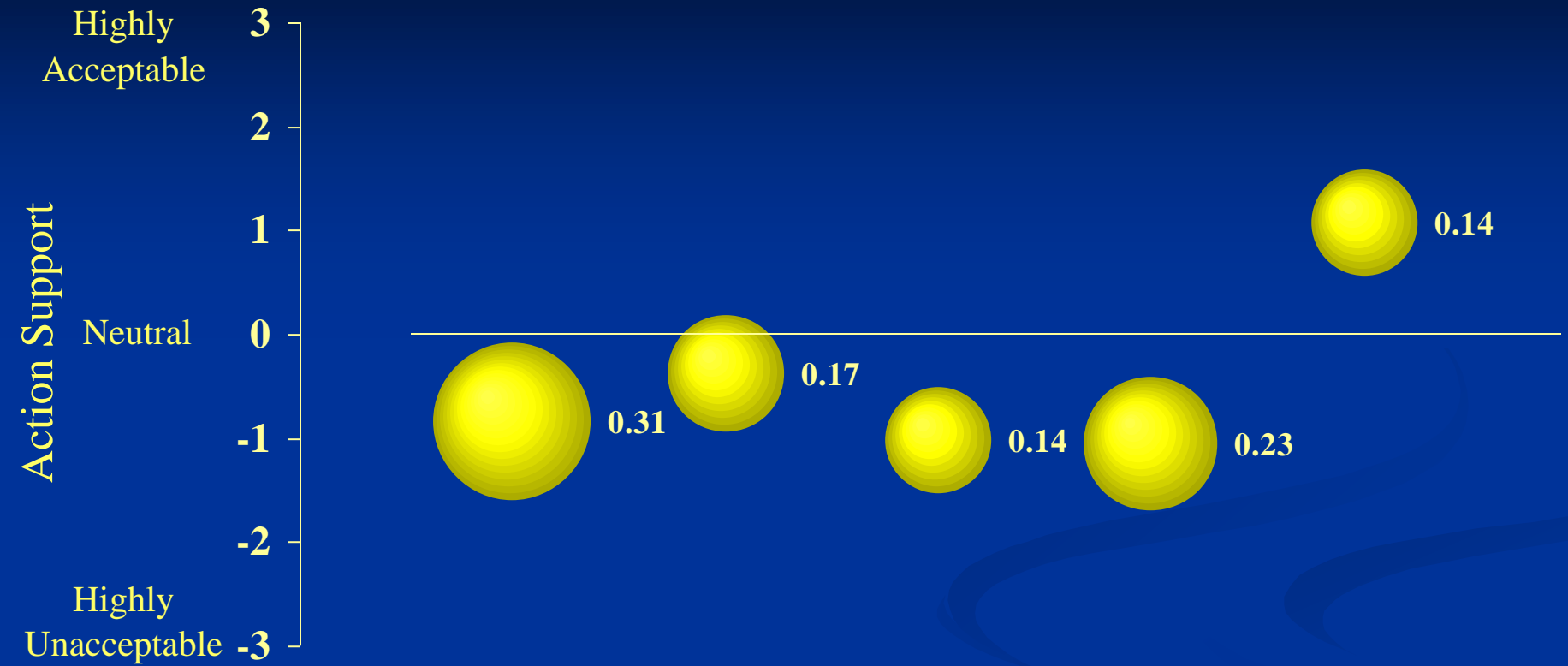
↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

Times of  
free reign

Current practices  
stay the same

# Beach Response



Surf/Swim at  
same time

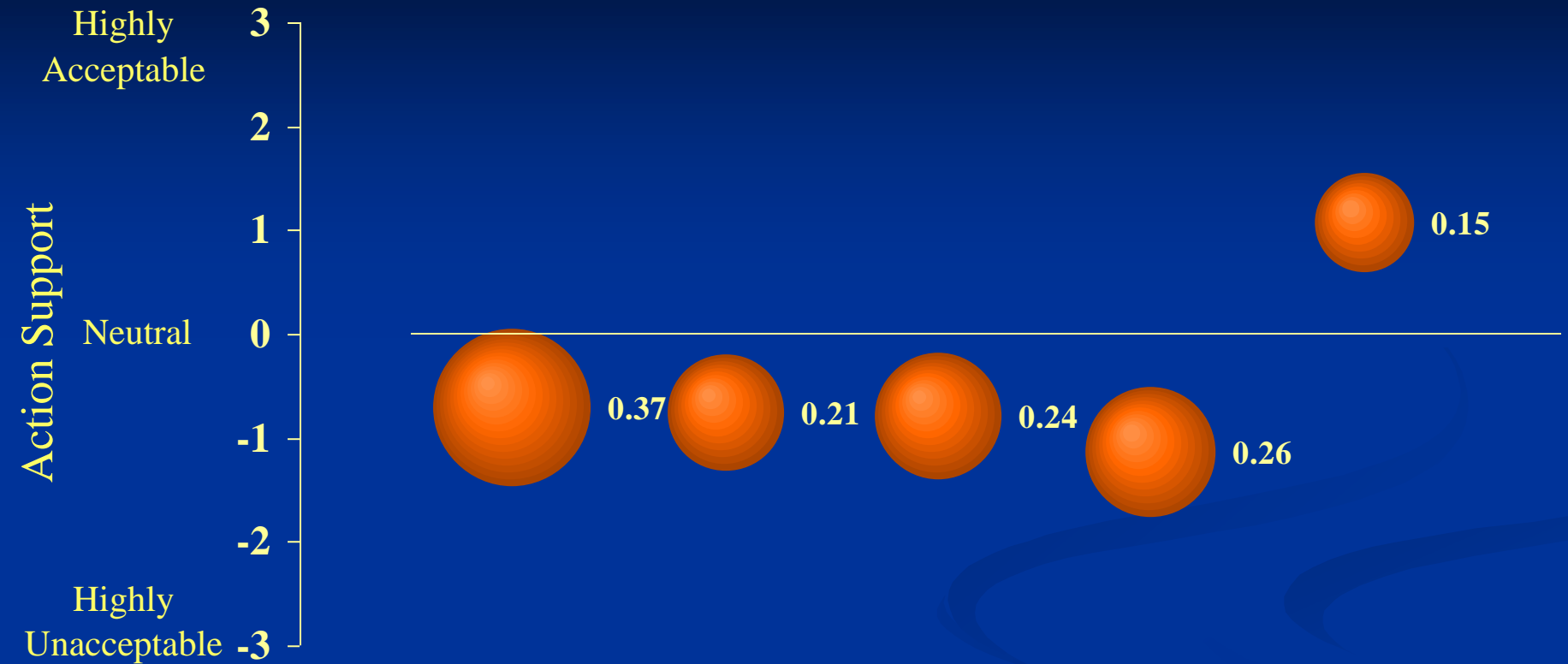
↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

Times of  
free reign

Current practices  
stay the same

# All Groups Response



Surf/Swim at  
same time

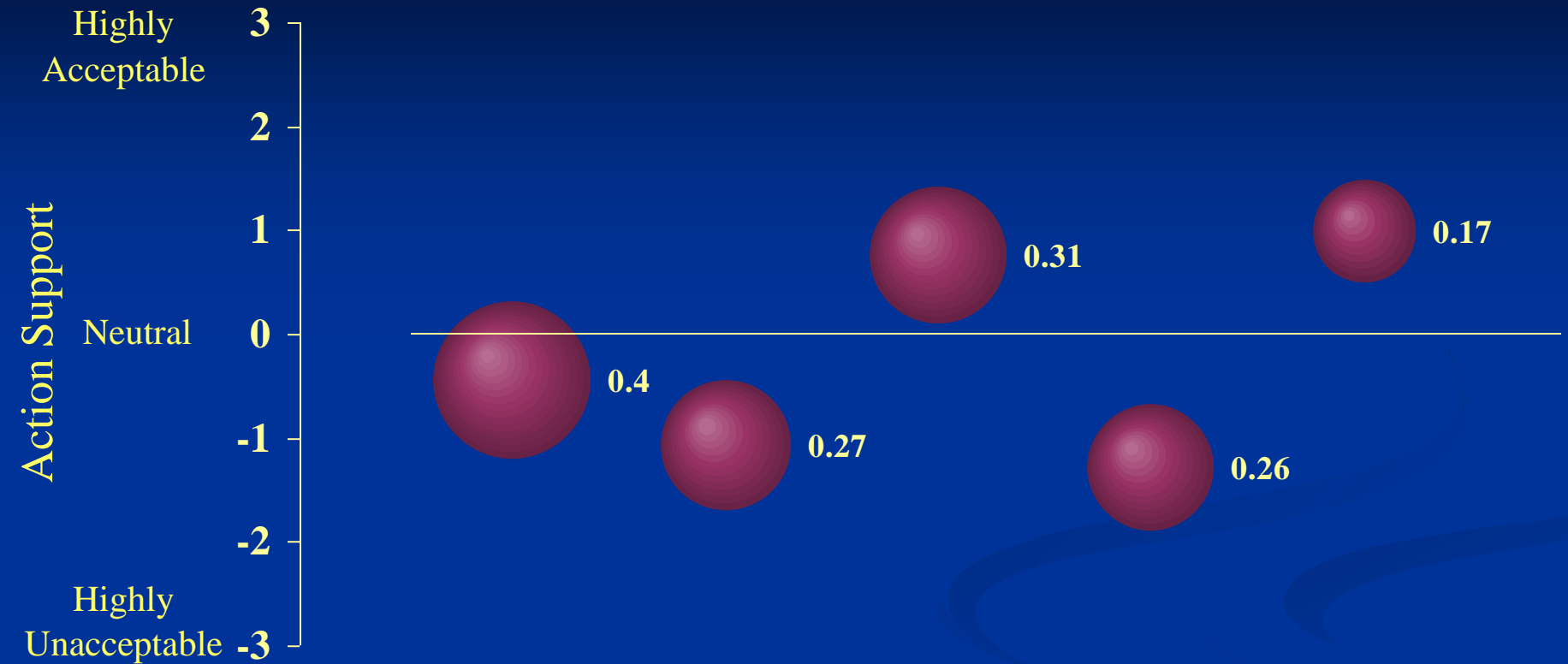
↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

Times of  
free reign

Current practices  
stay the same

# Jenness Beach Response



Surf/Swim at  
same time

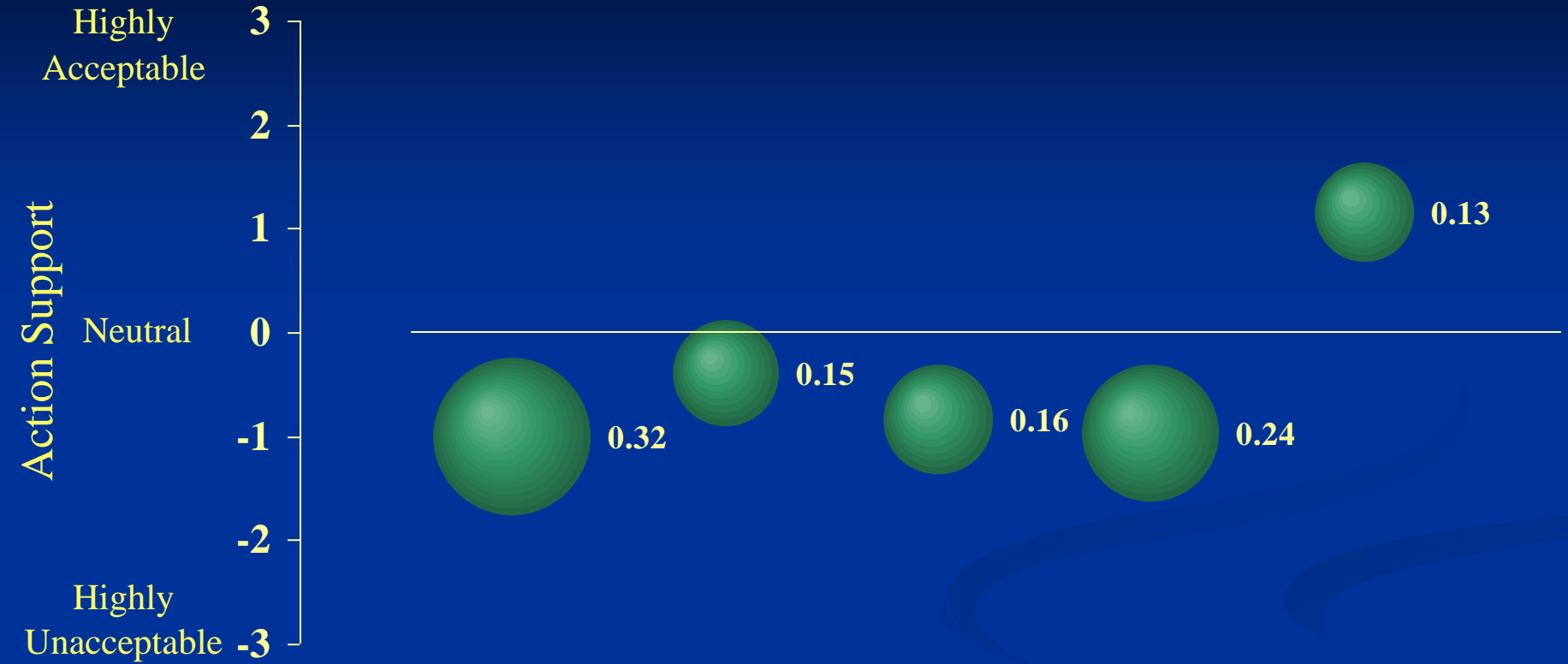
↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

Times of  
free reign

Current practices  
stay the same

# North Beach Response



Surf/Swim at  
same time

↑ Swim  
↓ Surf

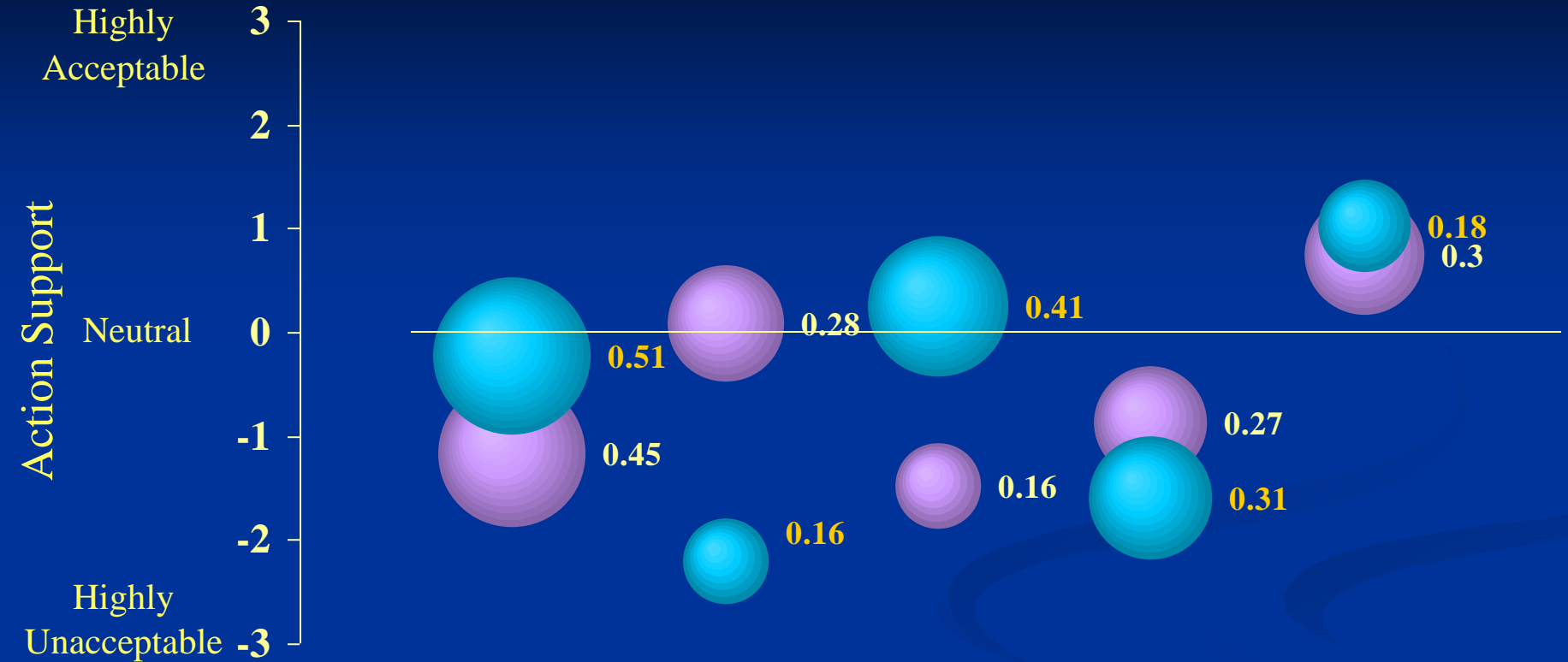
↓ Swim  
↑ Surf

Times of  
free reign

Current practices  
stay the same

# Compared Groups

# Swim and Surf Response



Surf/Swim at same time

↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

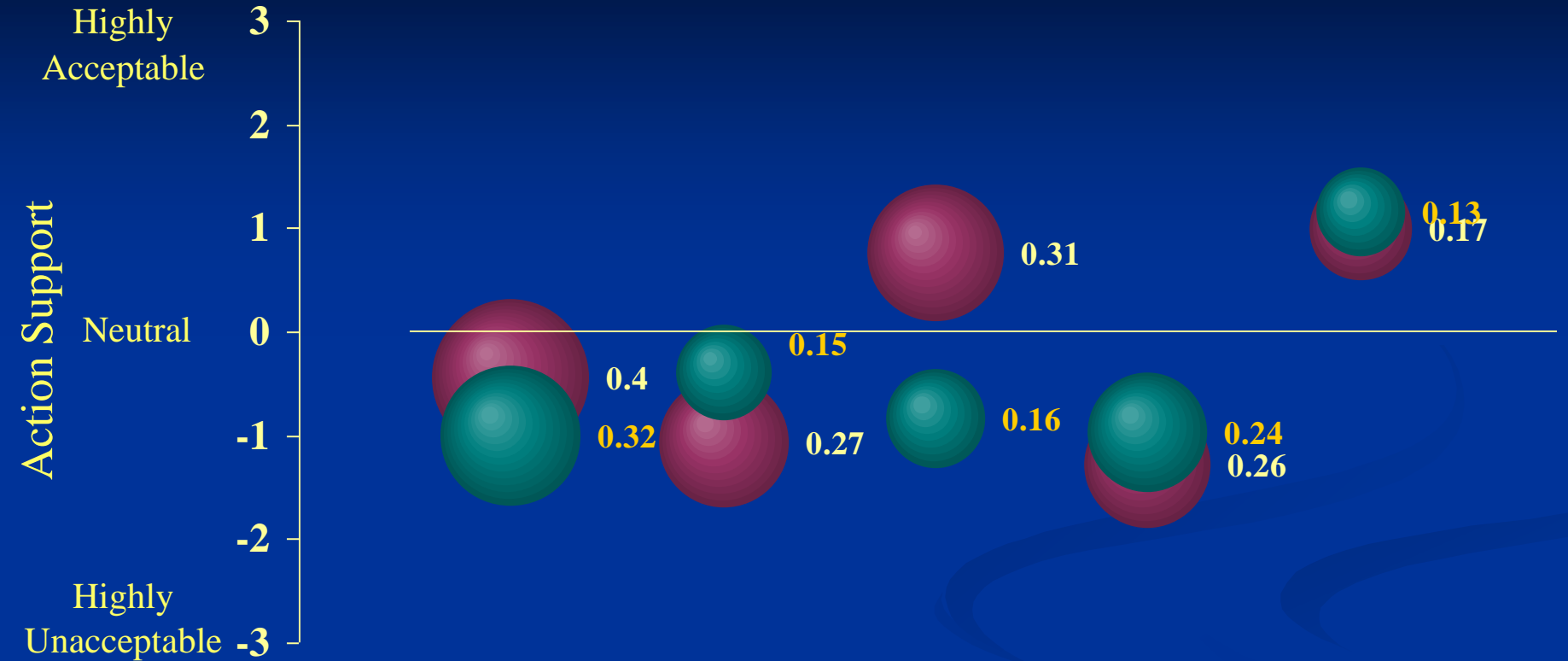
Times of free reign

Current practices stay the same

● Swim Response

● Surf Response

# Jenness and North Beach Response



Surf/Swim at same time

Swim ↑  
Surf ↓

Swim ↓  
Surf ↑

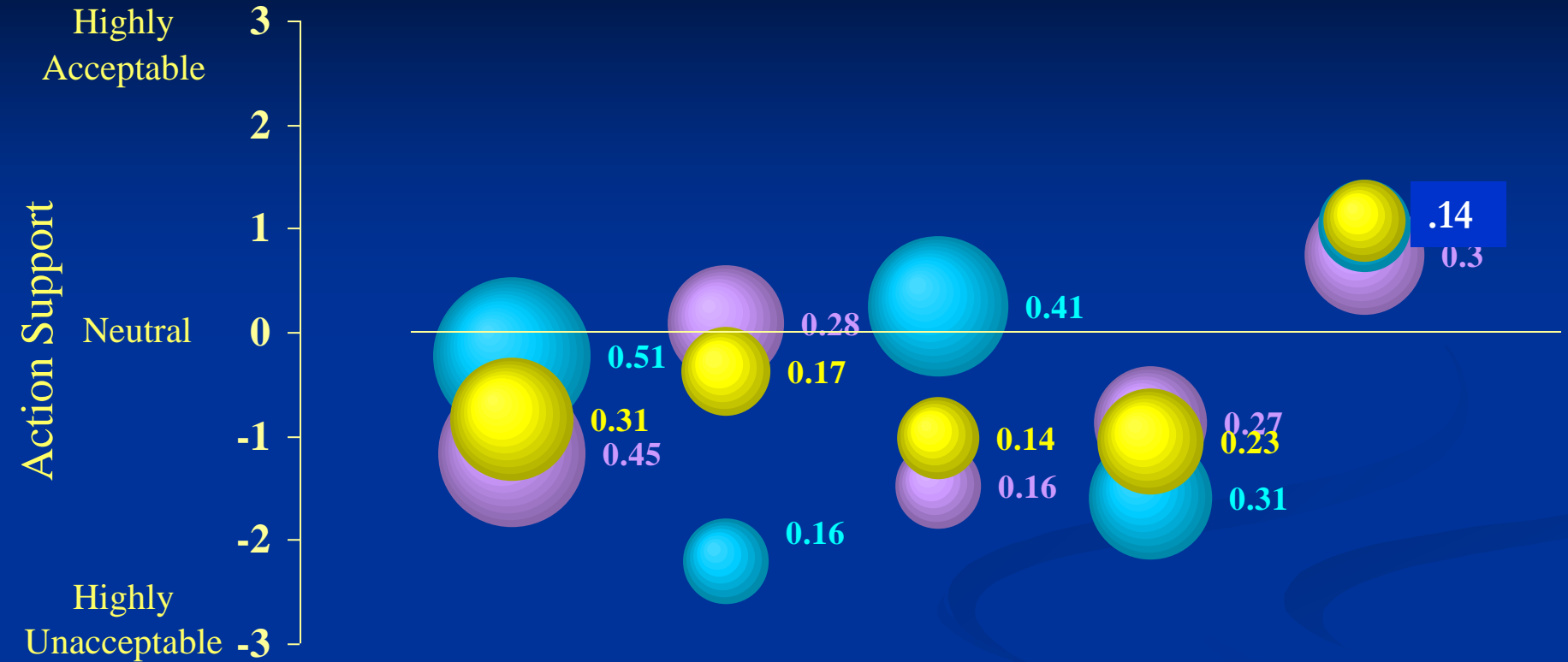
Times of free reign

Current practices stay the same

North Beach Response

Jenness Beach Response

# Swim, Surf, and Beach Response



Surf/Swim at same time

↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

Times of free reign

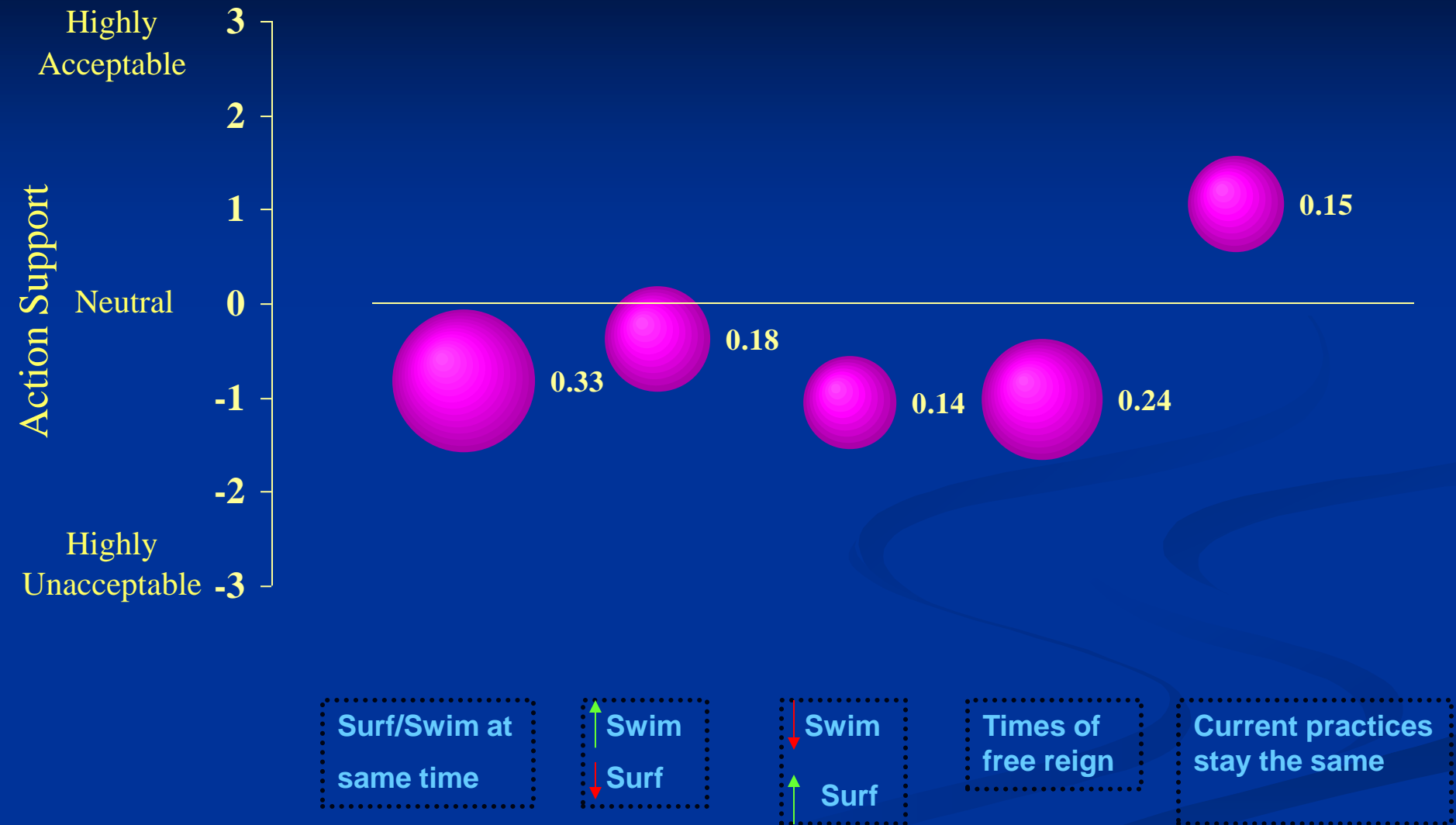
Current practices stay the same

Swim Response

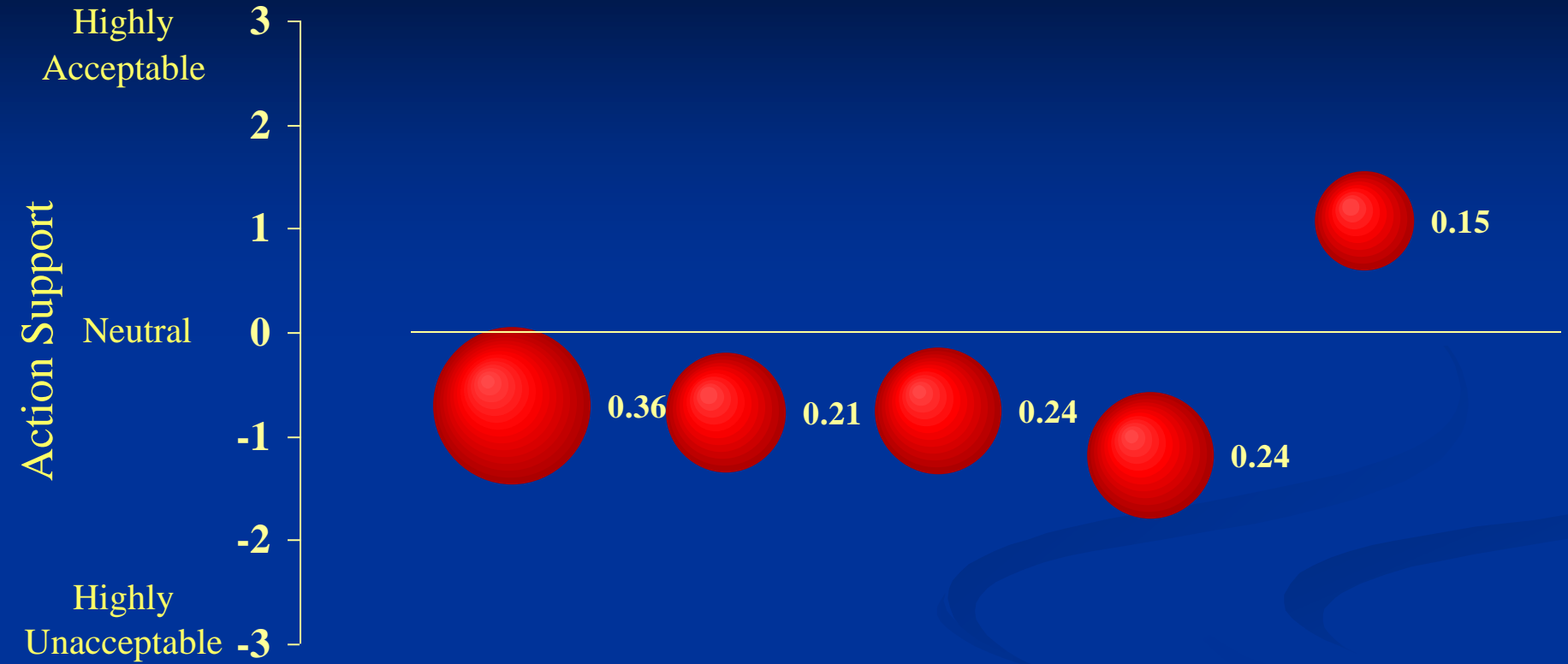
Beach Response

Surf Response

# Combined Beach and Swim



# Combined Beach and Surf



Surf/Swim at  
same time

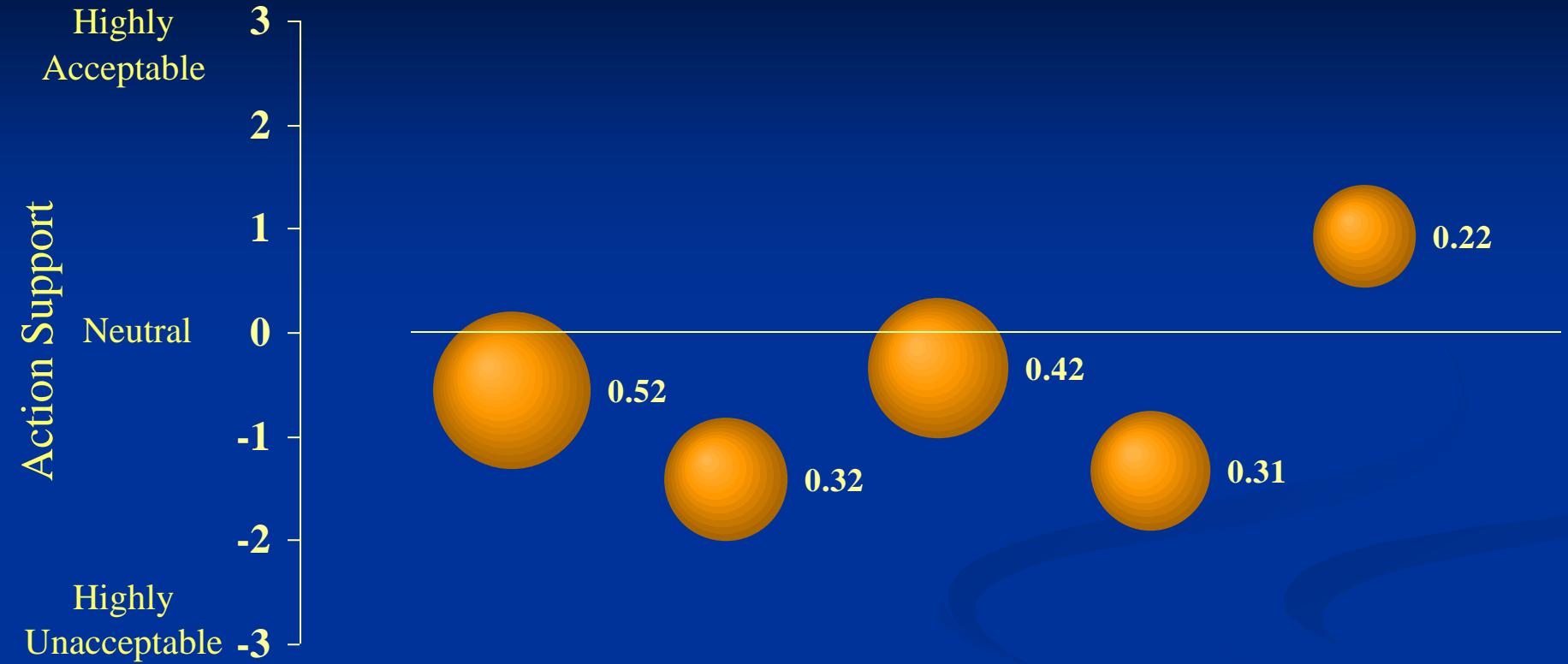
↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

Times of  
free reign

Current practices  
stay the same

# Combined Swim and Surf



Surf/Swim at  
same time

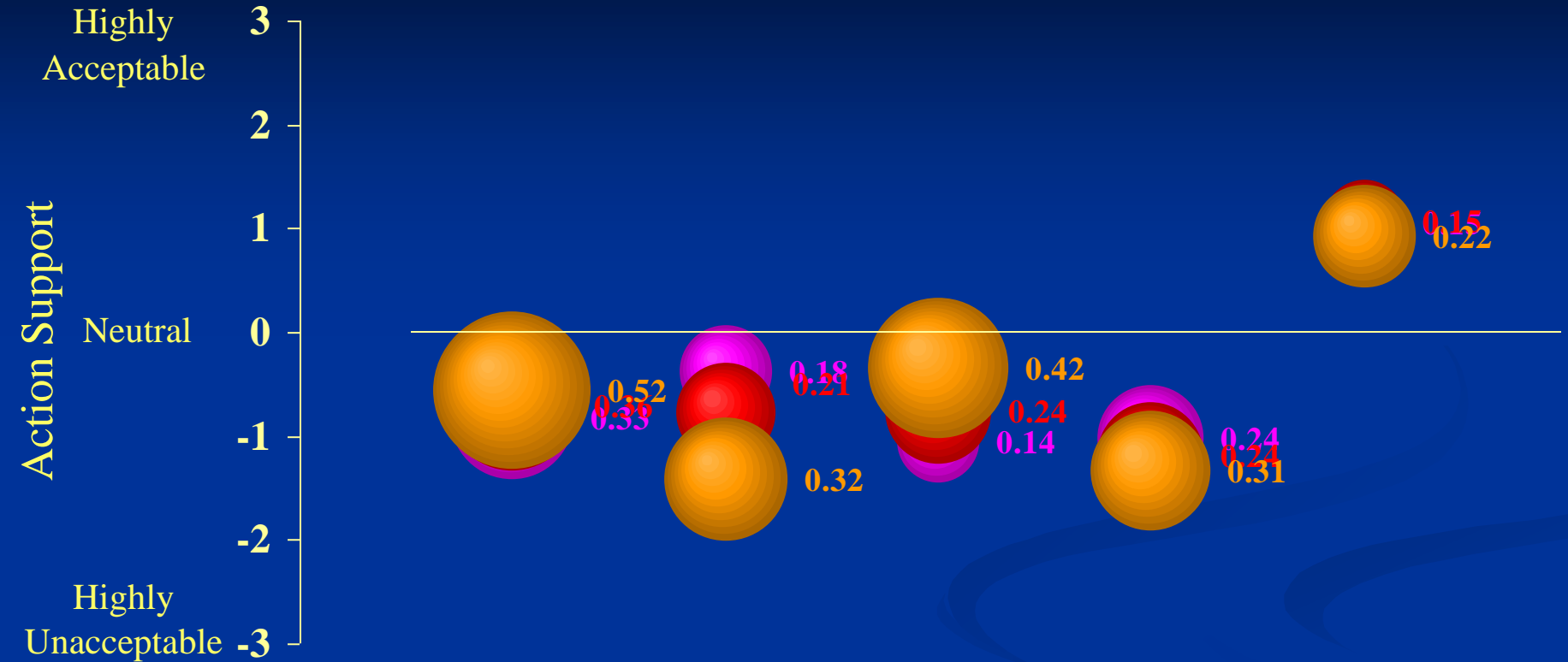
↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

Times of  
free reign

Current practices  
stay the same

# Swim, Surf, and Beach Response



Surf/Swim at same time

↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

Times of free reign

Current practices stay the same

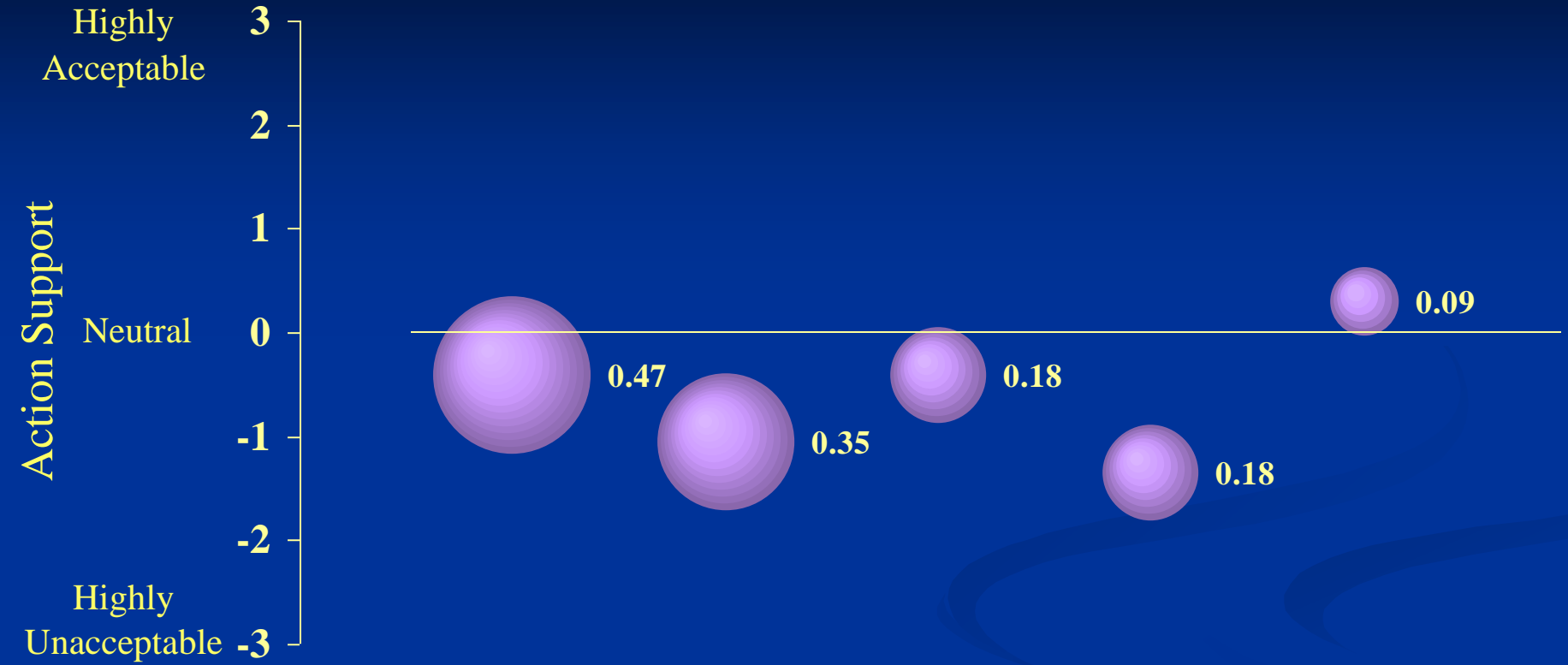
● Beach and Swim Response

● Beach and Surf Response

● Swim and Surf Response

# Skill level graphs (single)

# Beginner All



Surf/Swim at  
same time

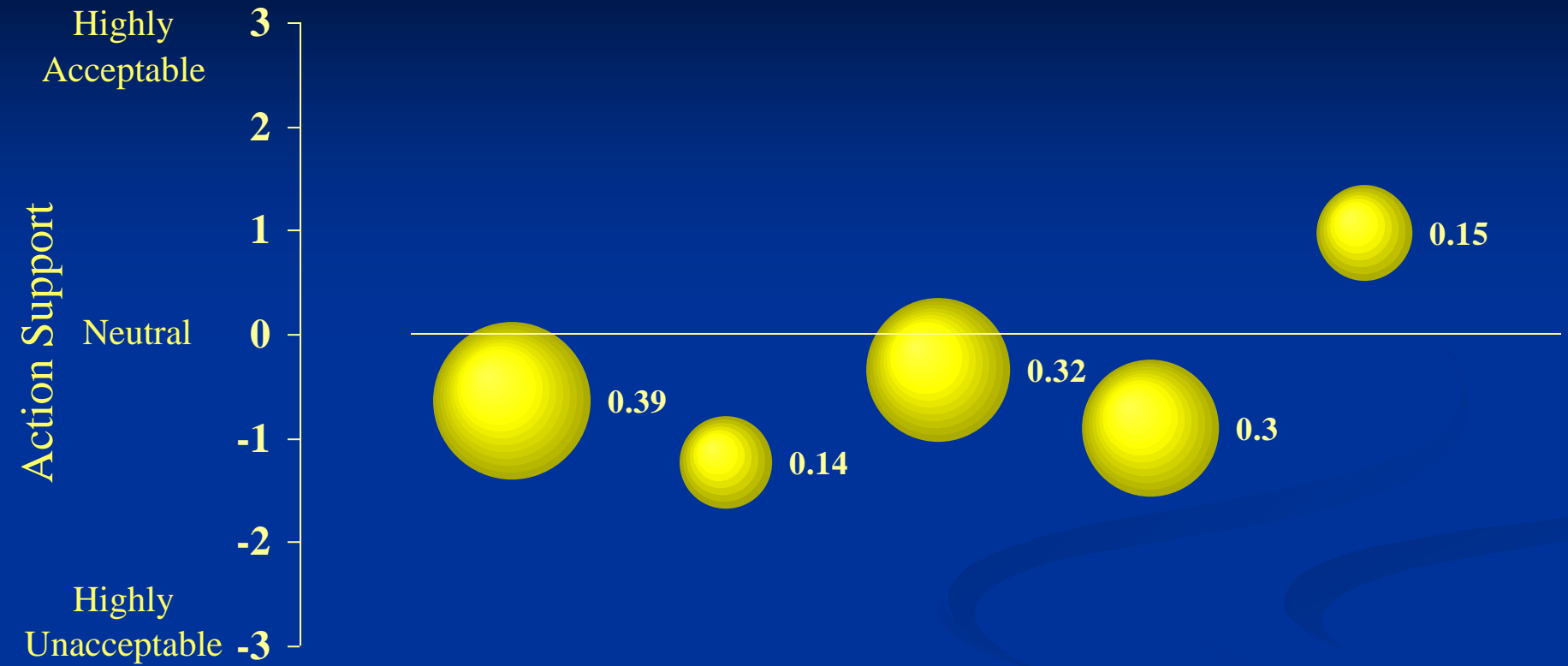
↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

Times of  
free reign

Current practices  
stay the same

# Intermediate- All



Surf/Swim at  
same time

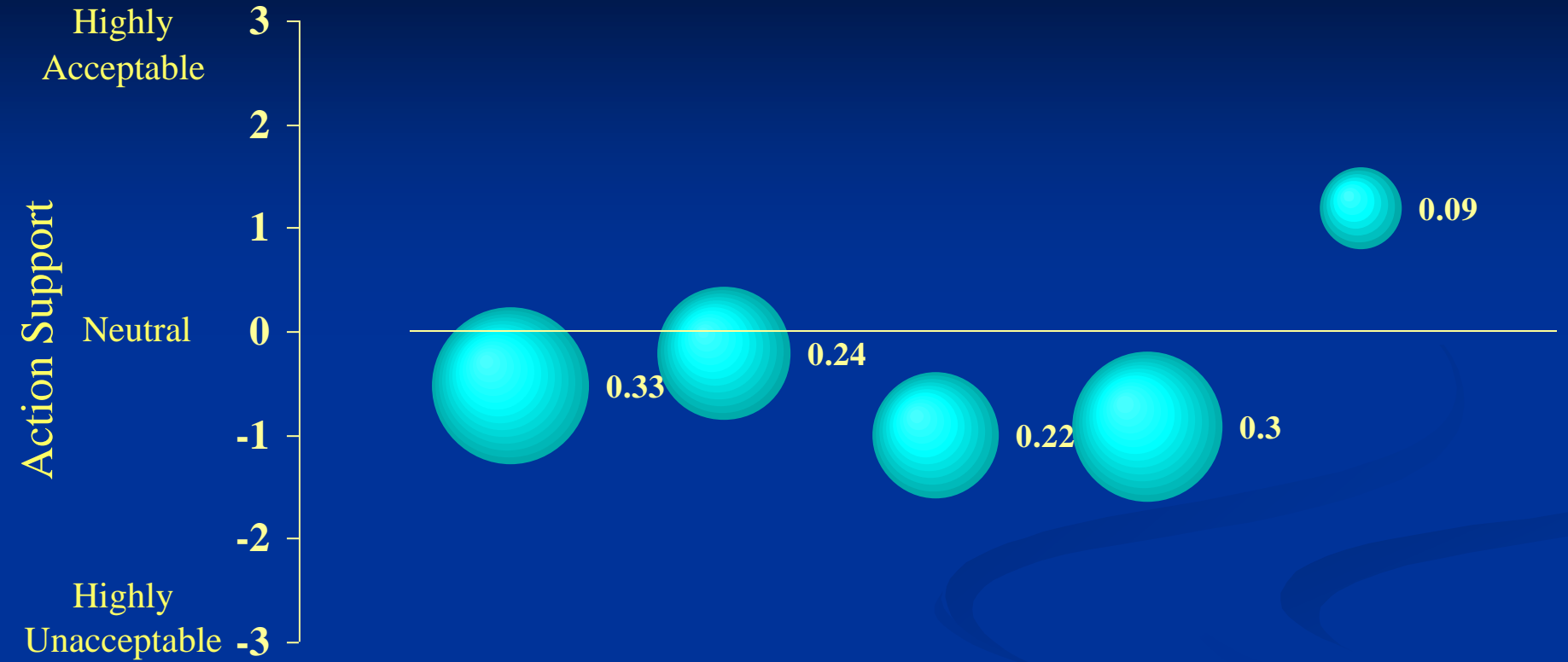
↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

Times of  
free reign

Current practices  
stay the same

# Advanced- All



Surf/Swim at  
same time

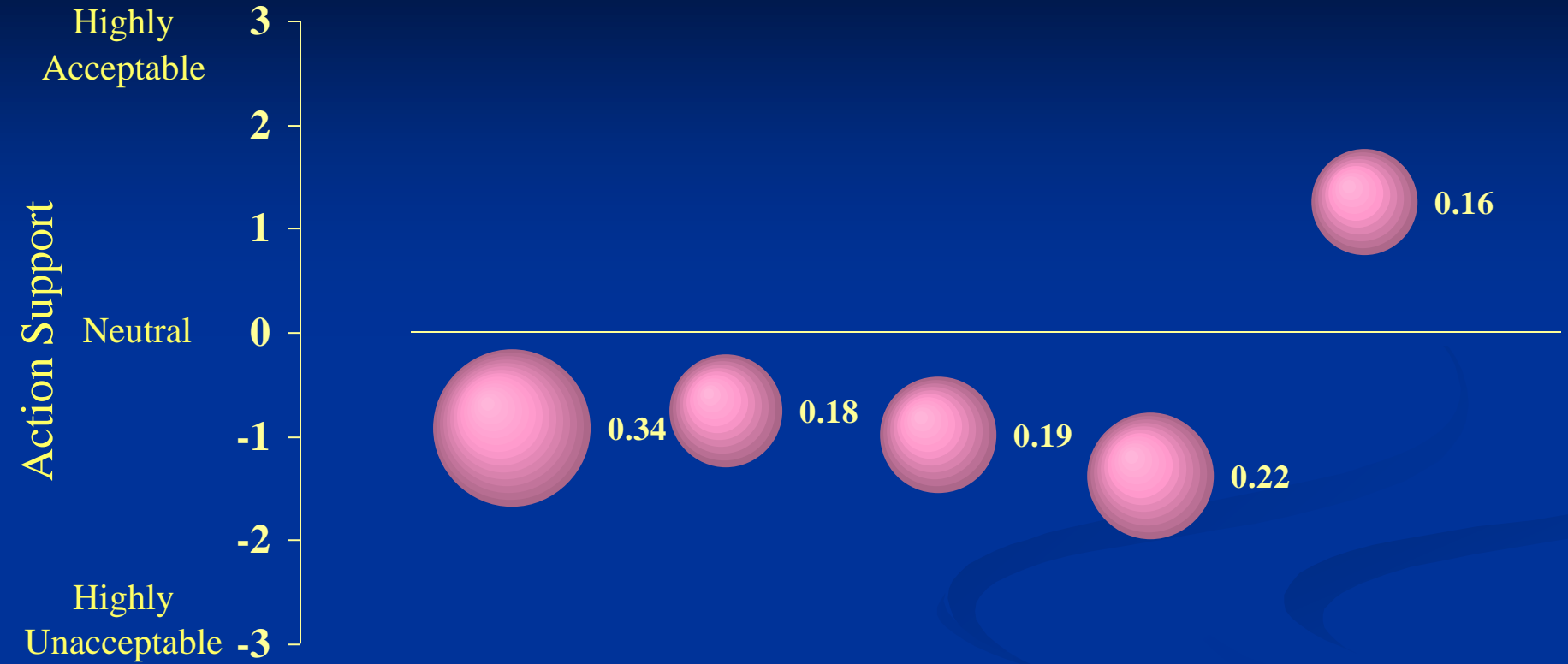
↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

Times of  
free reign

Current practices  
stay the same

# Expert- All



Surf/Swim at  
same time

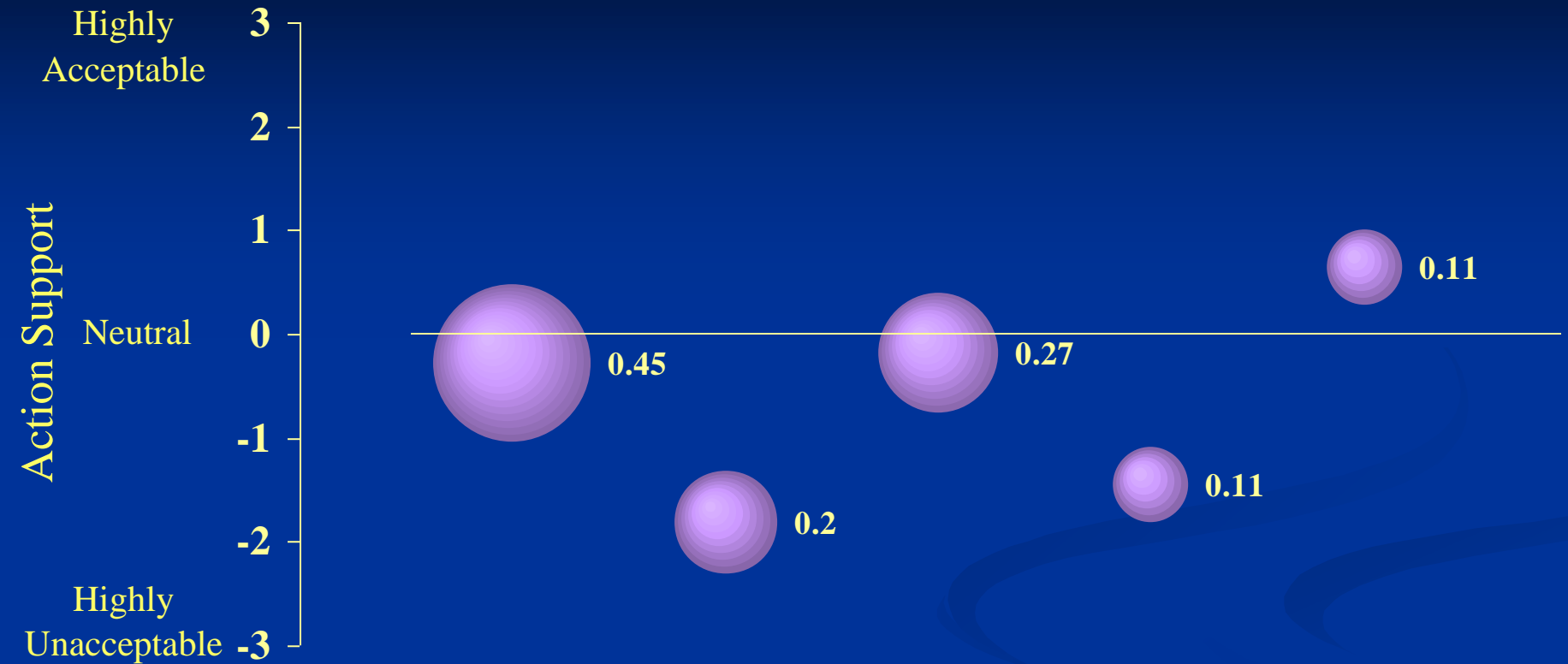
↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

Times of  
free reign

Current practices  
stay the same

# Beginner - Surf (n=11)



Surf/Swim at  
same time

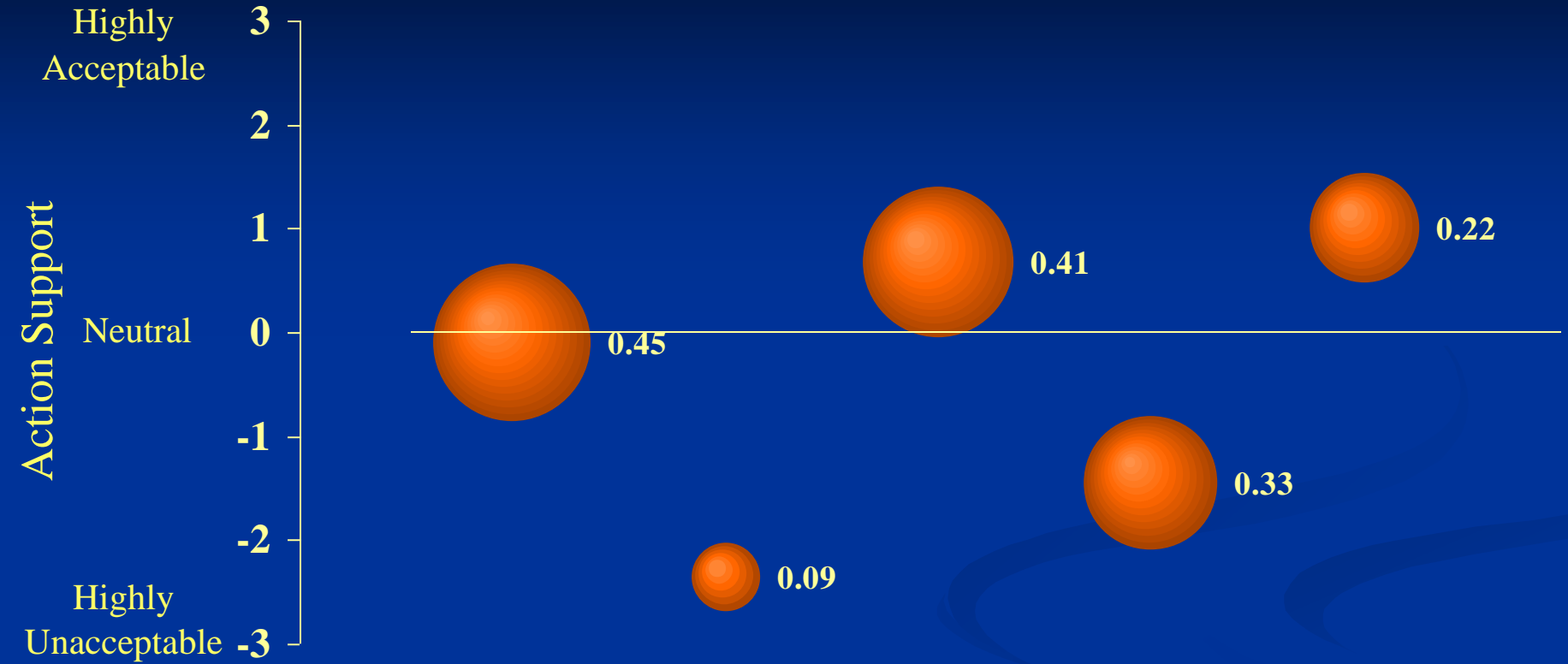
↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

Times of  
free reign

Current practices  
stay the same

# Intermediate- Surf (n=22)



Surf/Swim at  
same time

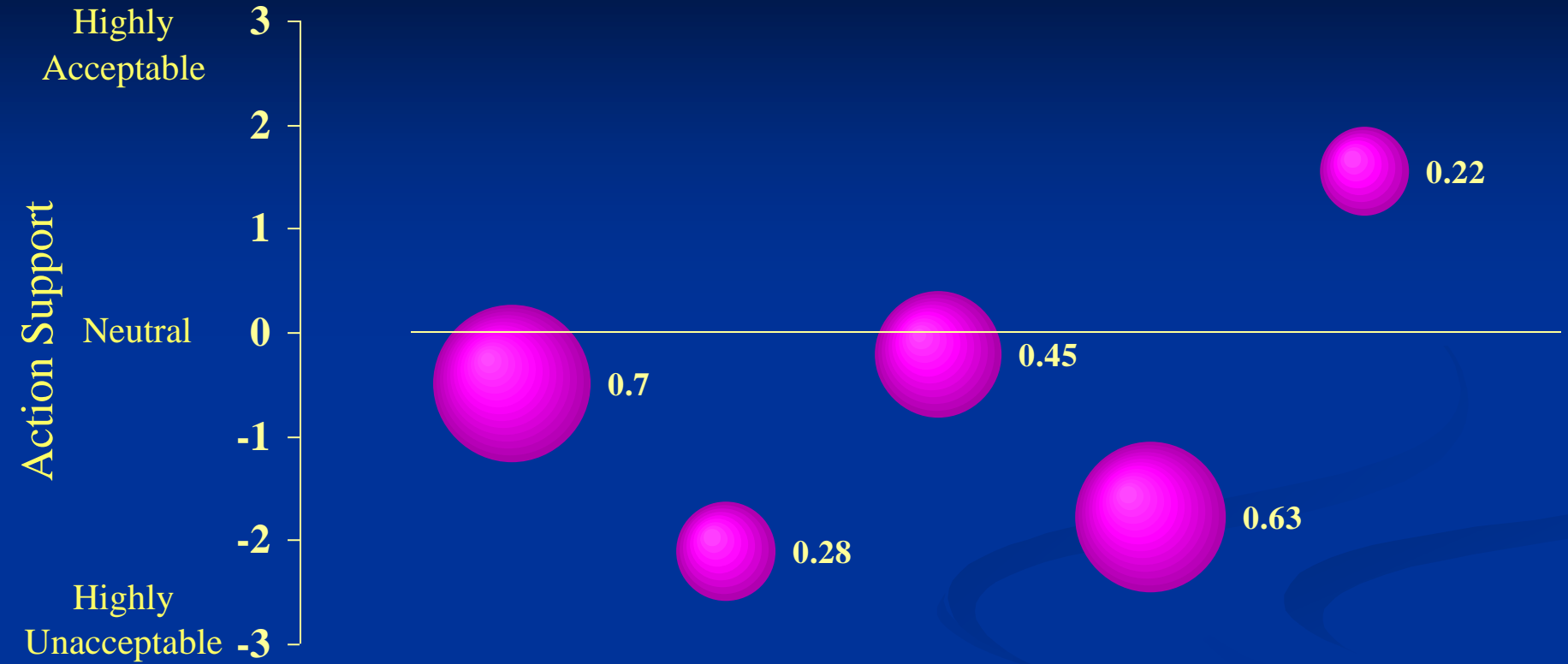
↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

Times of  
free reign

Current practices  
stay the same

# Advanced-Surf (n=9)



Surf/Swim at  
same time

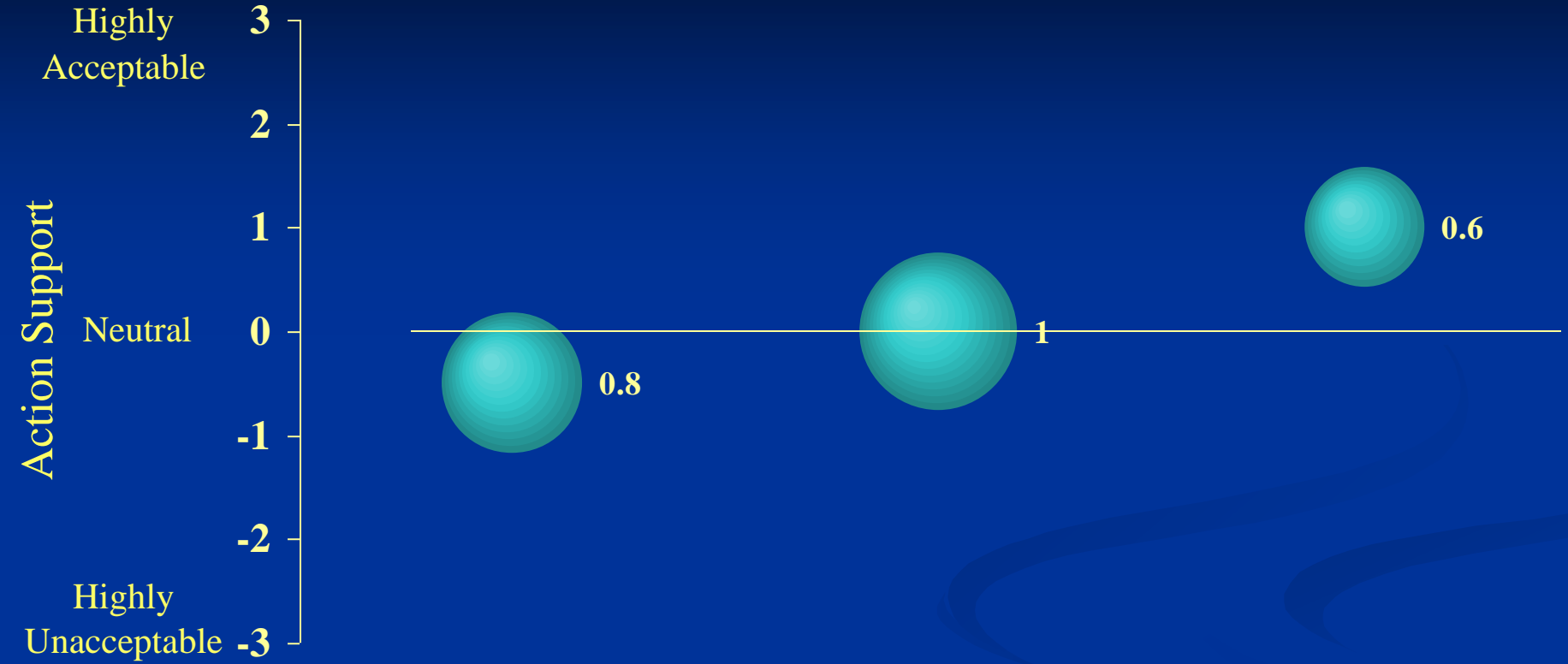
↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

Times of  
free reign

Current practices  
stay the same

# Expert-Surf (n=2)



Surf/Swim at same time

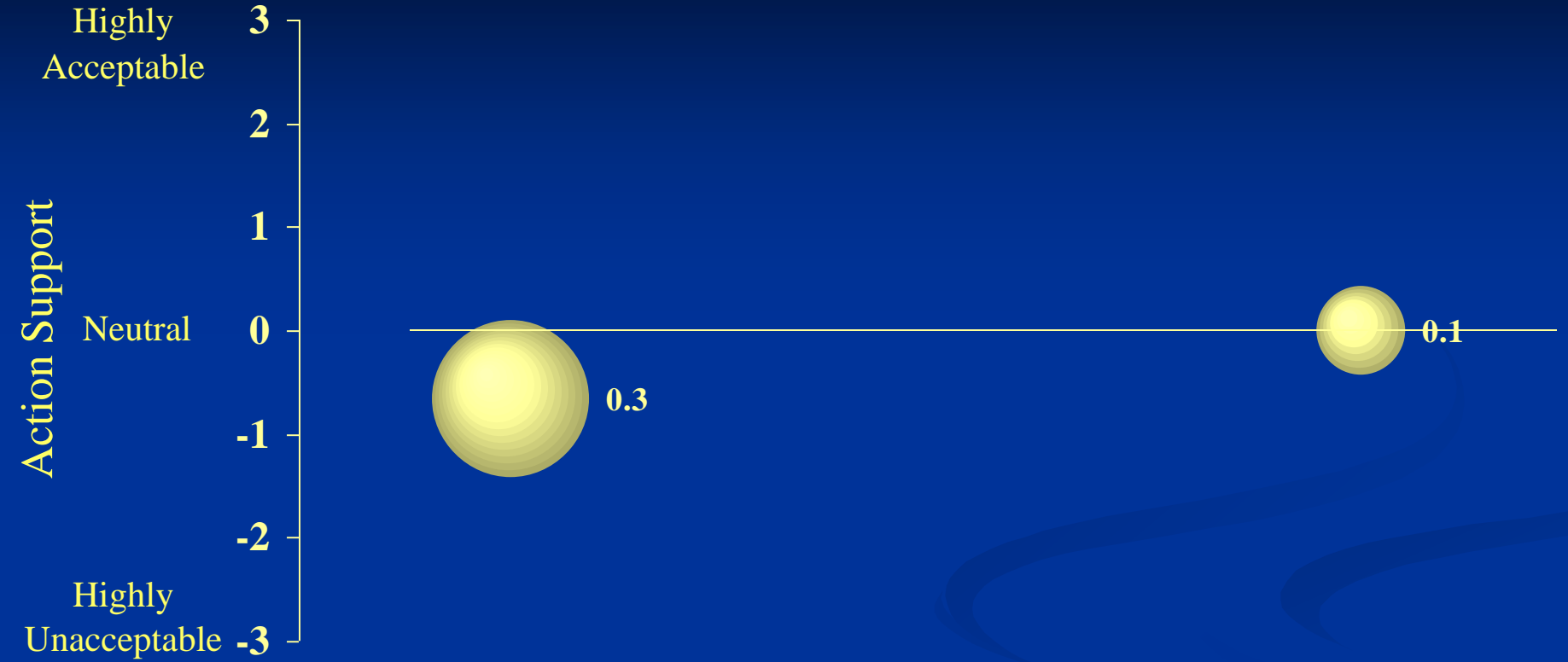
↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

Times of free reign

Current practices stay the same

# Beginner- Swim



Surf/Swim at  
same time

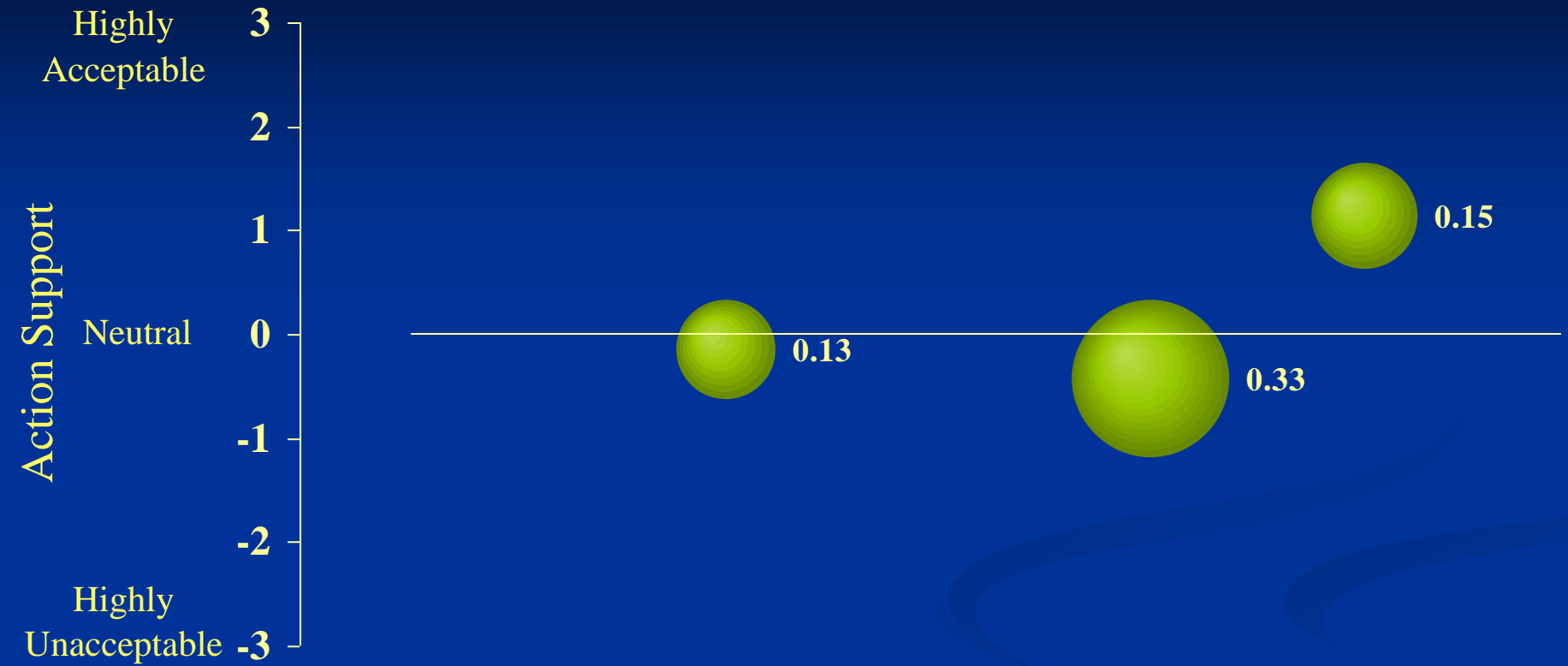
↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

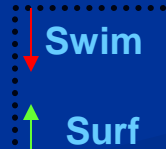
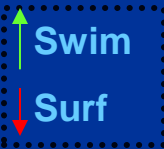
Times of  
free reign

Current practices  
stay the same

# Intermediate- Swim



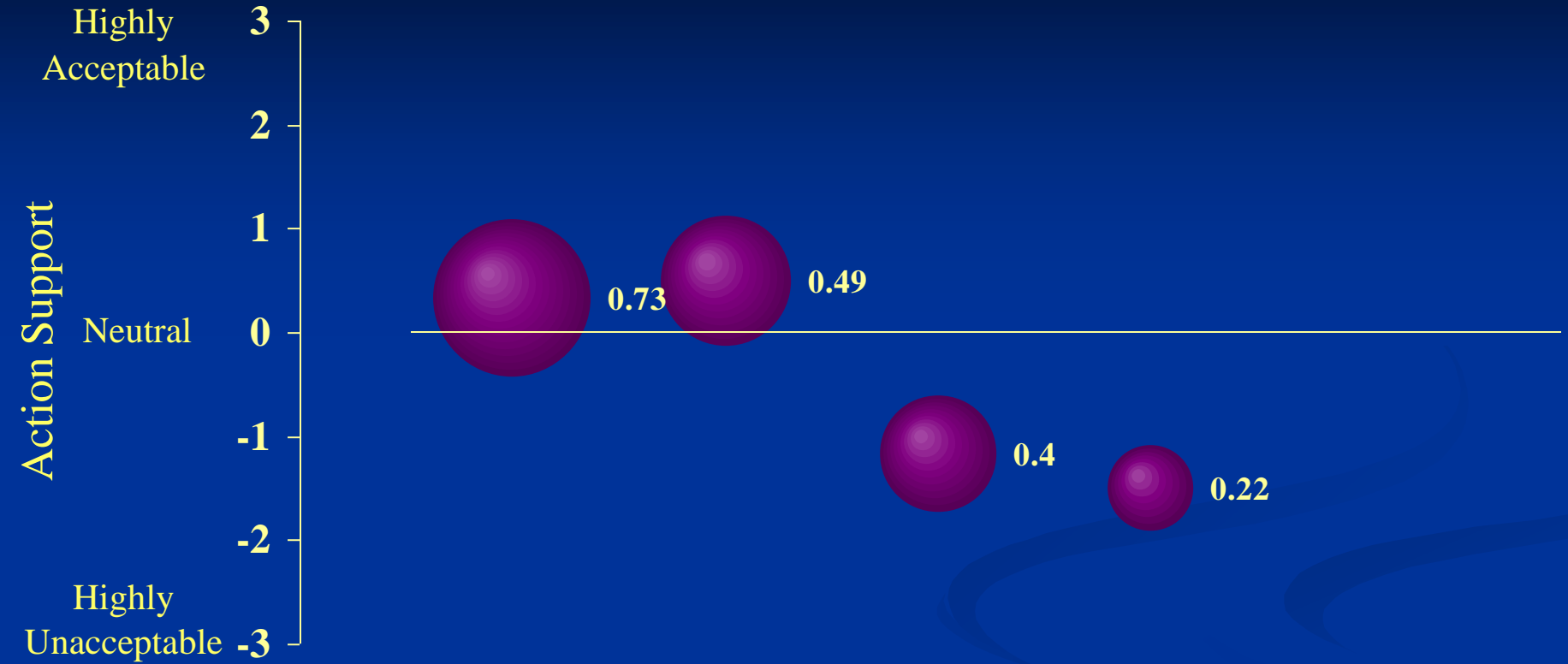
Surf/Swim at  
same time



Times of  
free reign

Current practices  
stay the same

# Advanced-Swim



Surf/Swim at  
same time

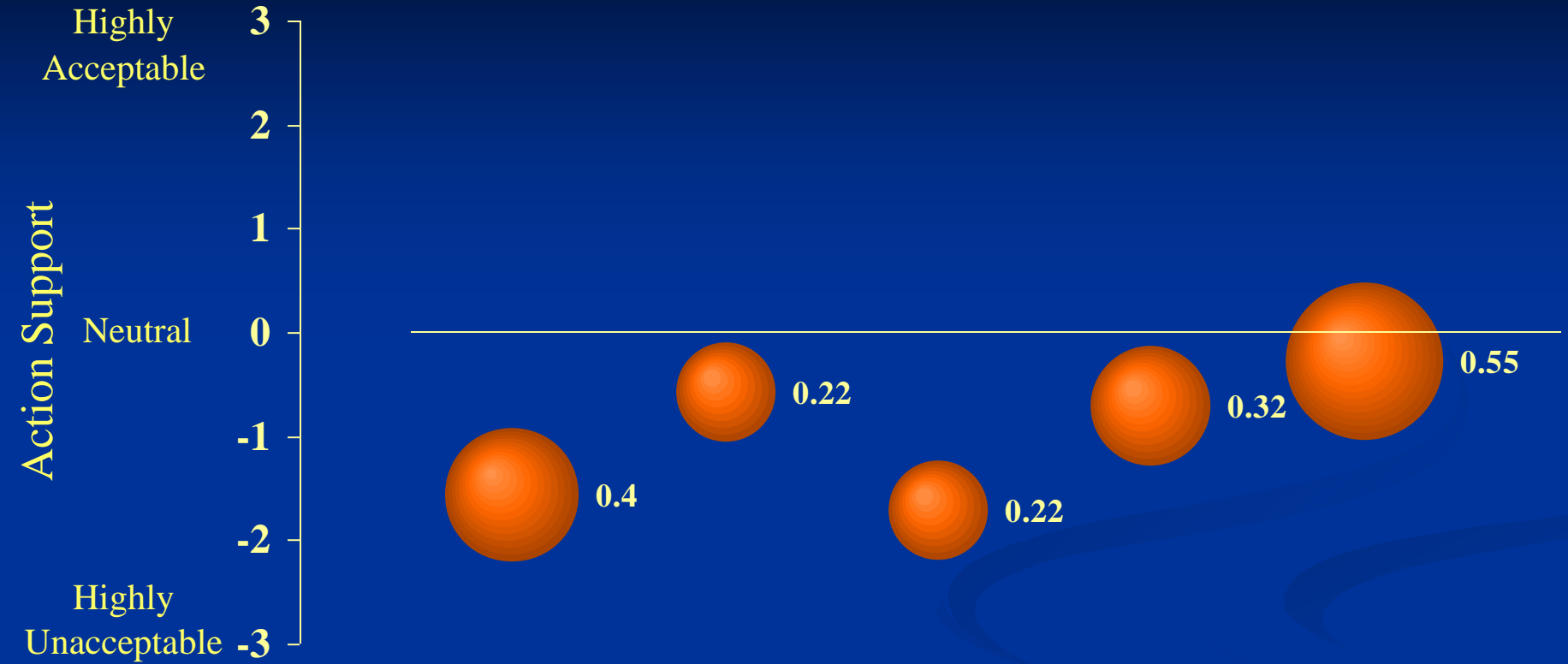
↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

Times of  
free reign

Current practices  
stay the same

# Expert- Swim



Surf/Swim at  
same time

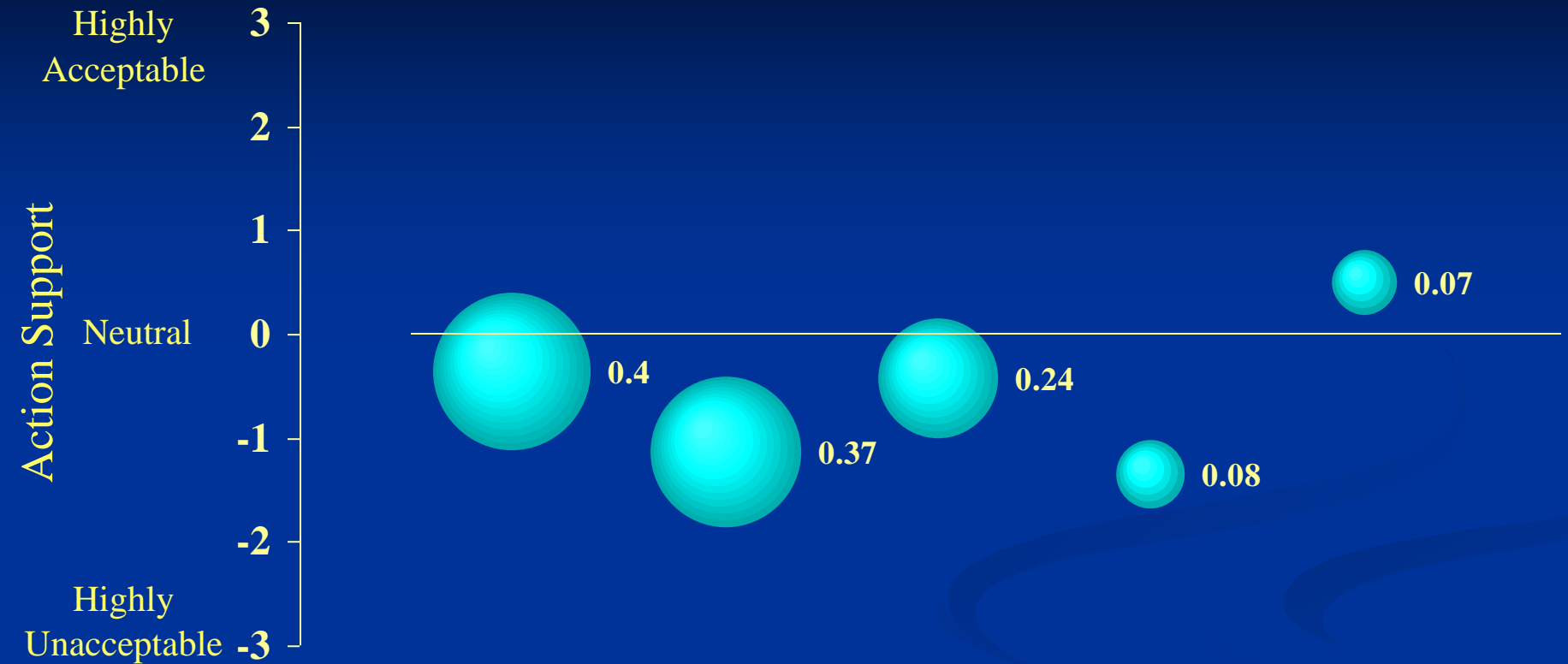
↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

Times of  
free reign

Current practices  
stay the same

# Beginner- Surf/Swim



Surf/Swim at  
same time

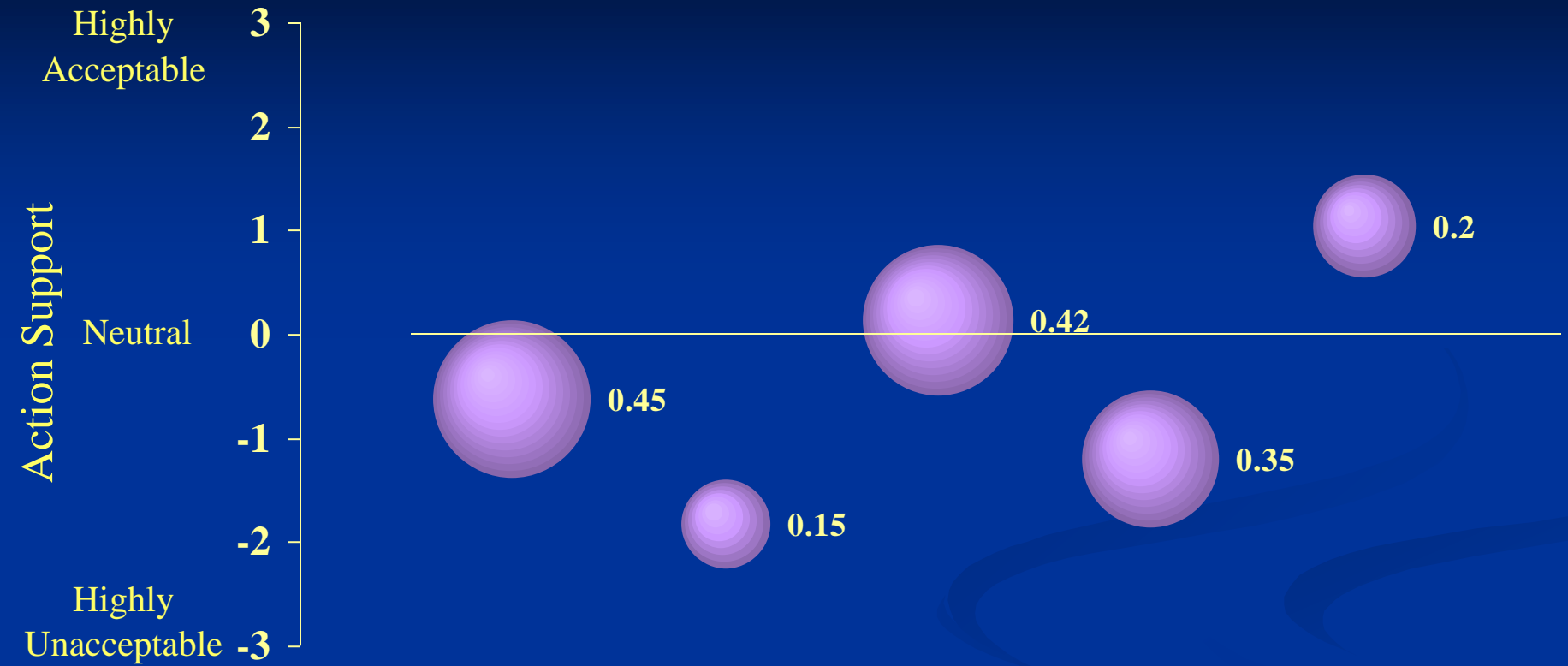
↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

Times of  
free reign

Current practices  
stay the same

# Intermediate- Surf/Swim



Surf/Swim at  
same time

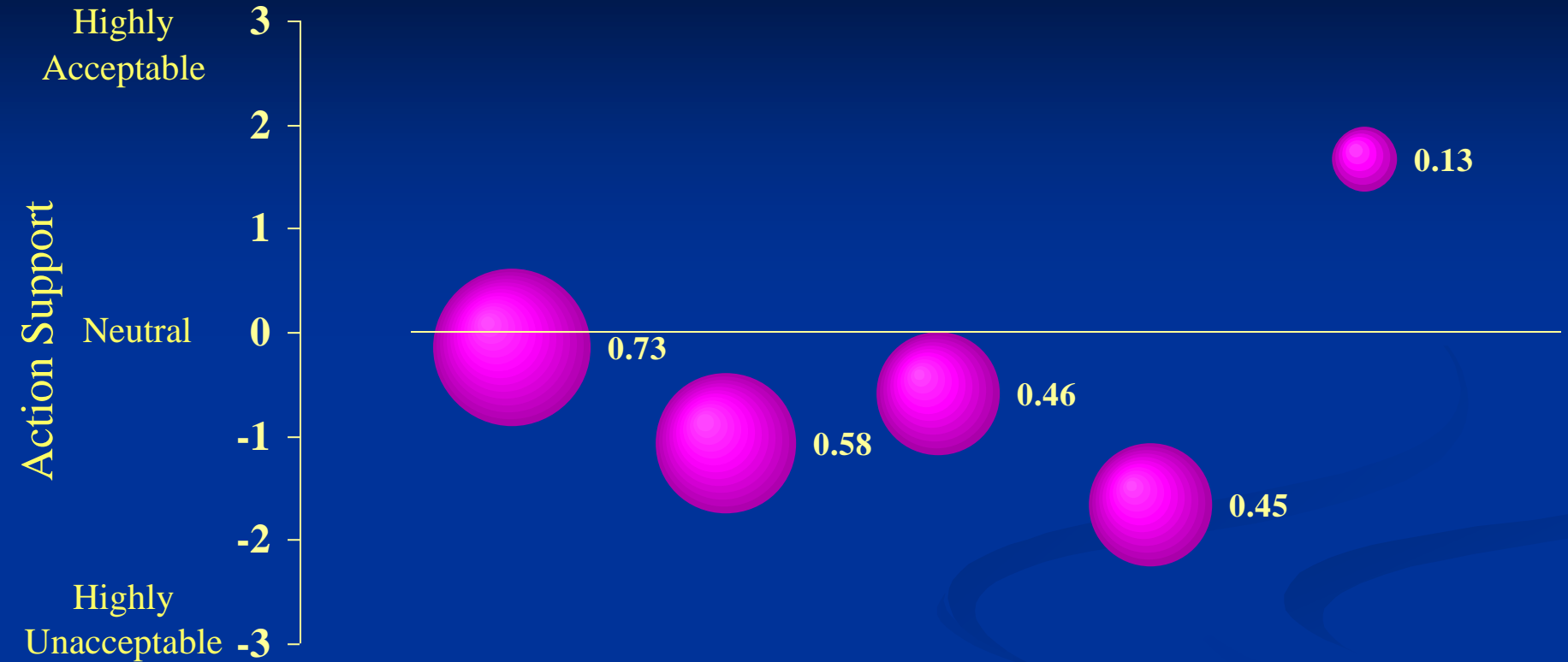
↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

Times of  
free reign

Current practices  
stay the same

# Advanced- Surf/Swim



Surf/Swim at  
same time

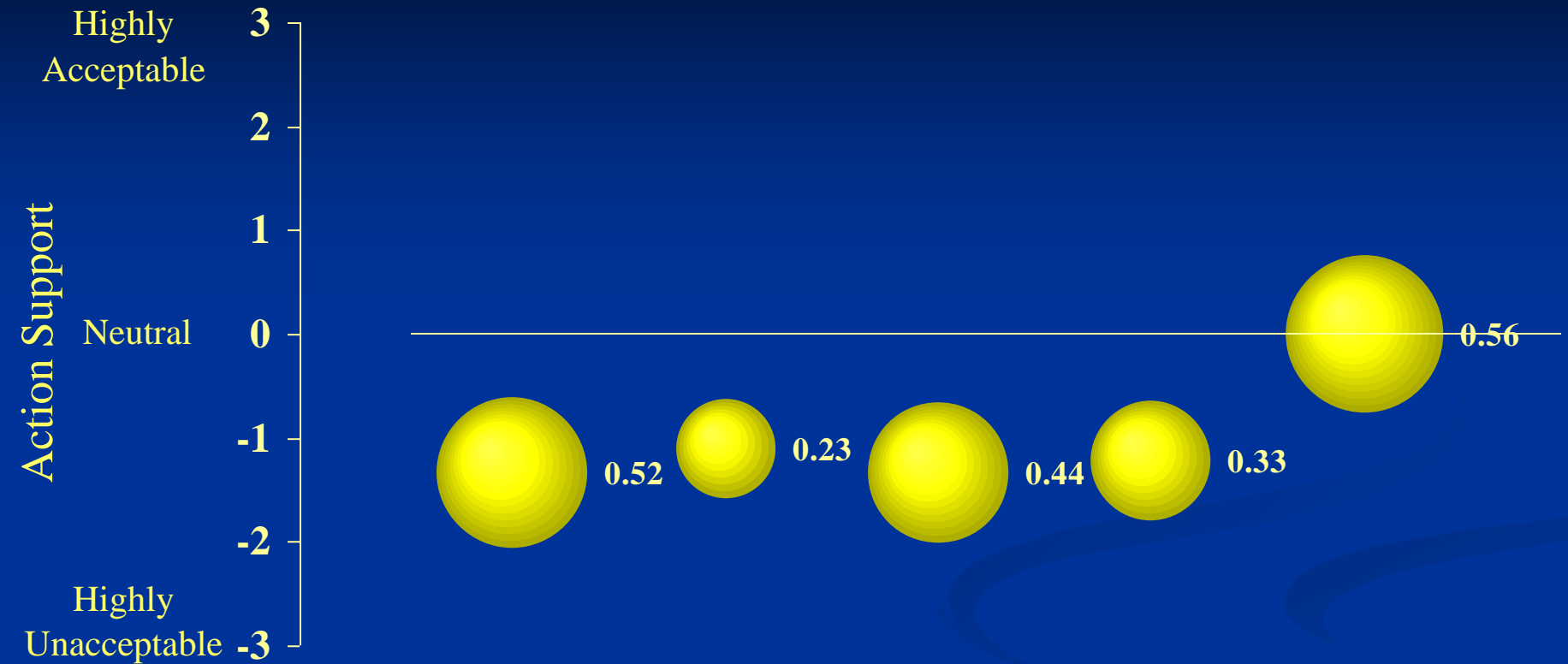
↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

Times of  
free reign

Current practices  
stay the same

# Expert- Surf/Swim



Surf/Swim at  
same time

↑ Swim  
↓ Surf

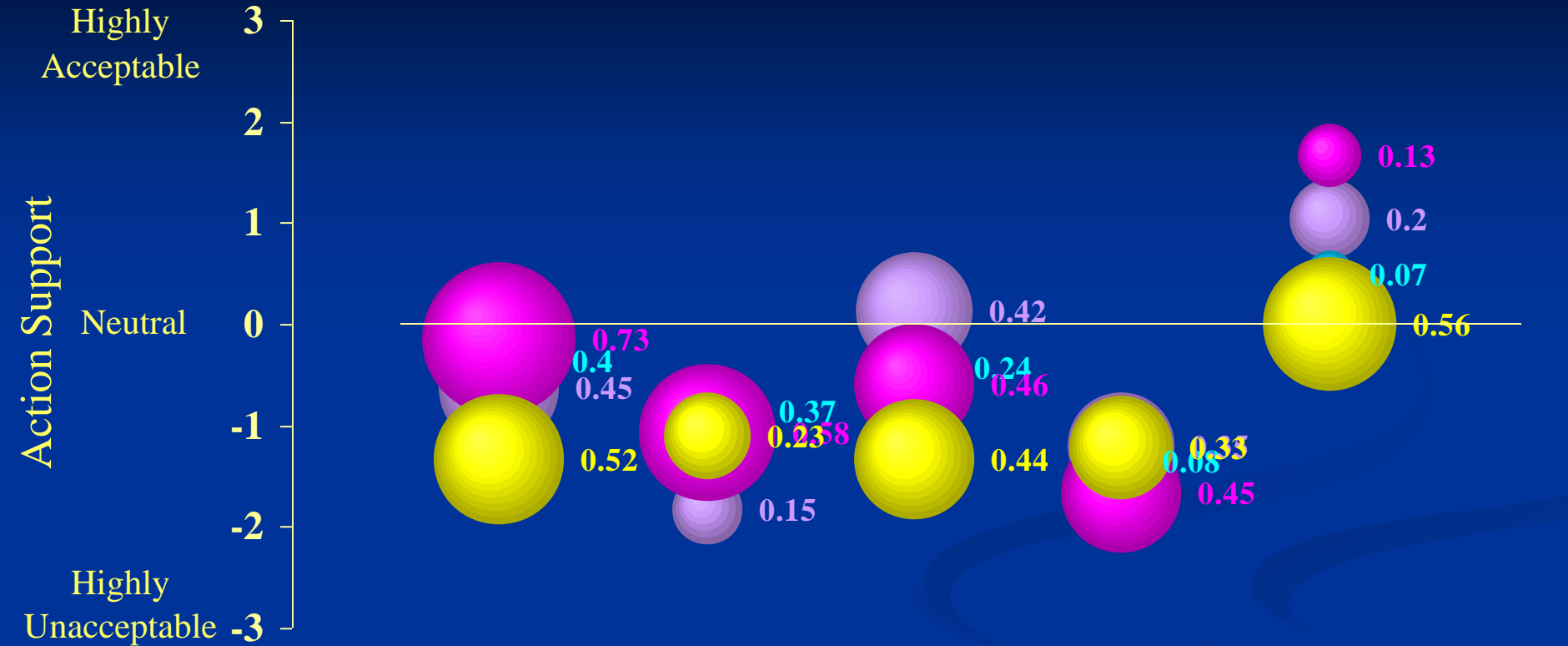
↓ Swim  
↑ Surf

Times of  
free reign

Current practices  
stay the same

# Skill level graphs (combined)

# Swim and Surf (Combined)



Surf/Swim at same time

↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

Times of free reign

Current practices stay the same

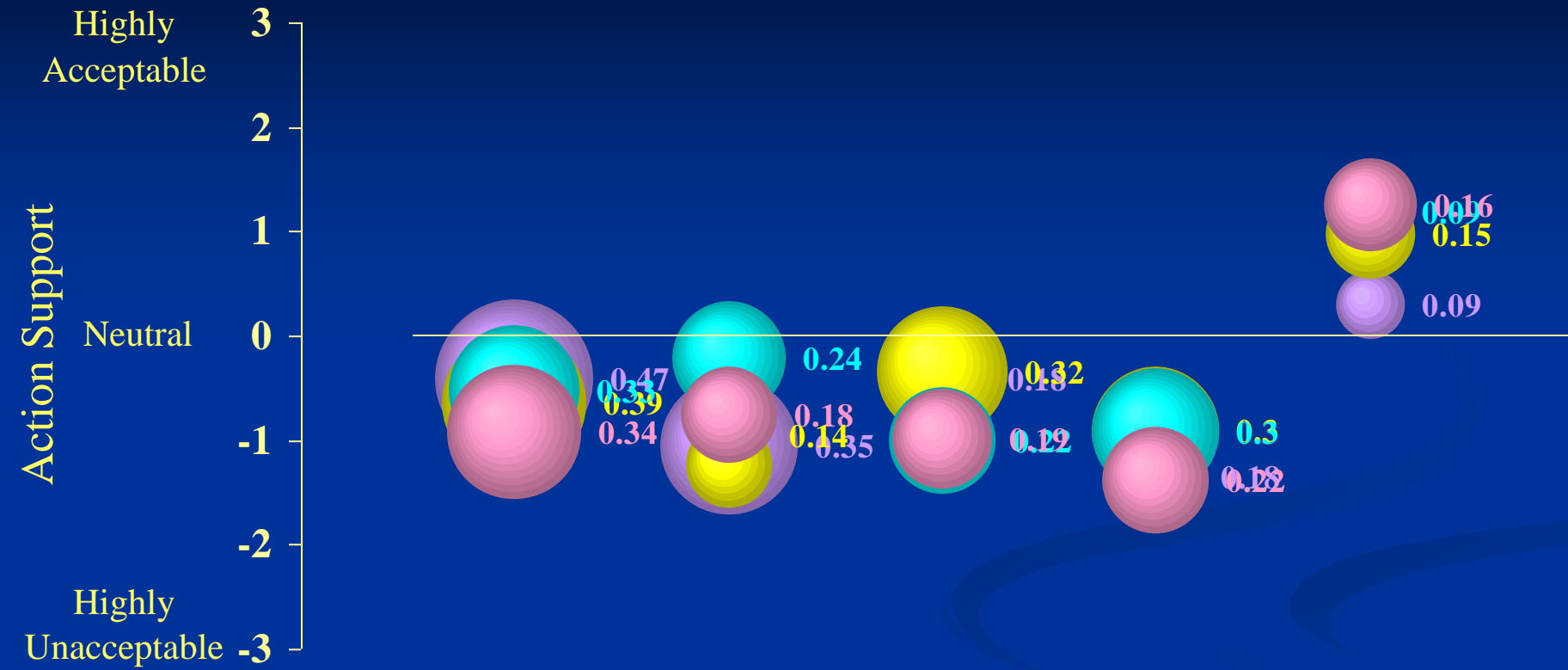
● Beginner Response

● Advanced Response

● Intermediate Response

● Expert Response

# All Groups Skill Levels



Surf/Swim at same time

↑ Swim  
↓ Surf

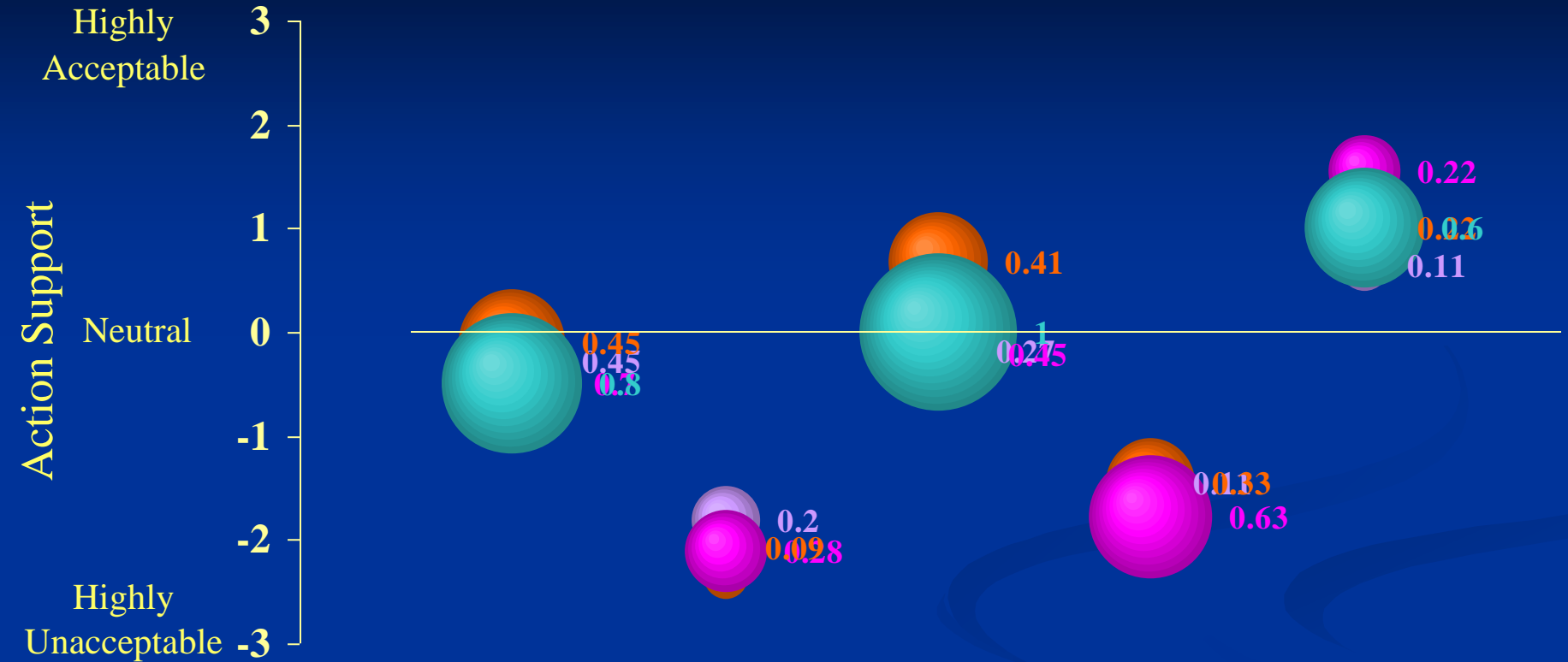
↓ Swim  
↑ Surf

Times of free reign

Current practices stay the same

- Beginner Response
- Advanced Response
- Intermediate Response
- Expert Response

# Surfer Skill Levels



Surf/Swim at same time

Swim  
Surf

Swim  
Surf

Times of free reign

Current practices stay the same

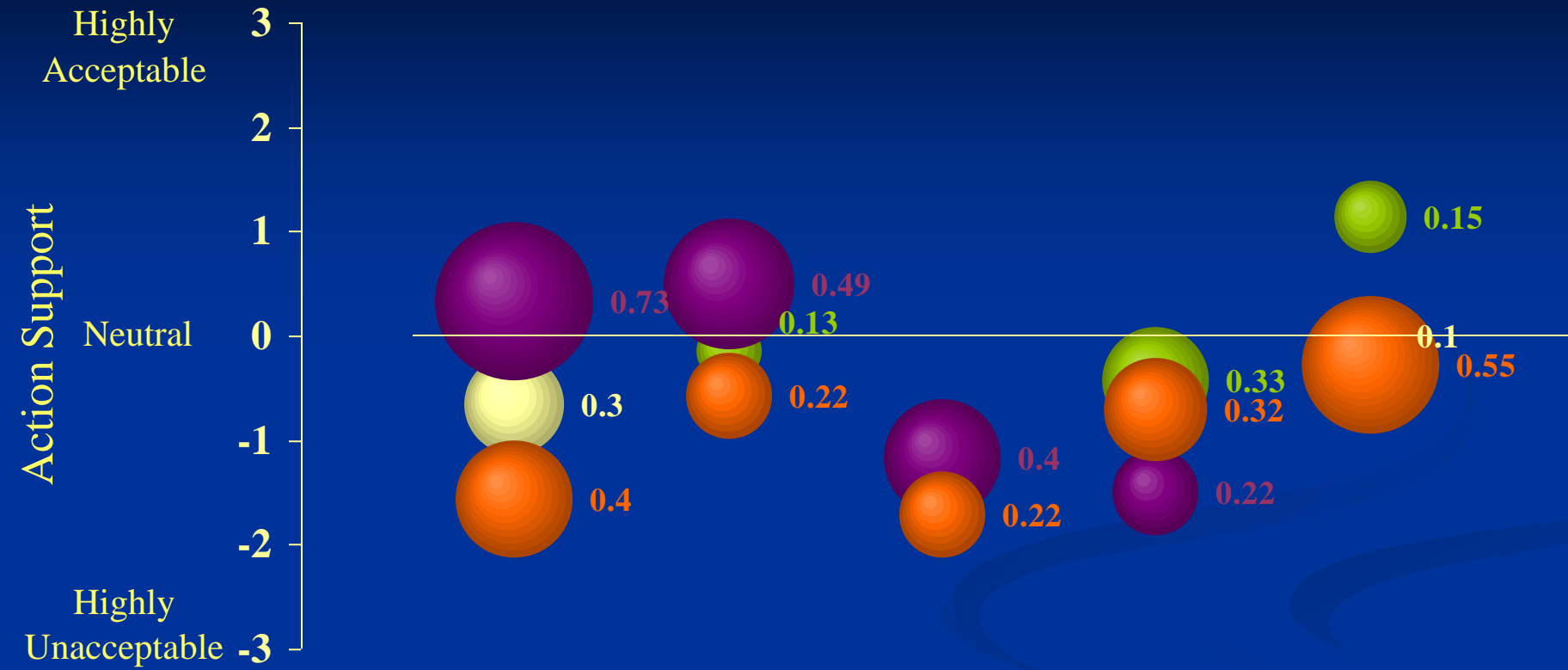
Beginner Response

Advanced Response

Intermediate Response

Expert Response

# Swimmer Skill Levels



Surf/Swim at same time

Swim  
Surf

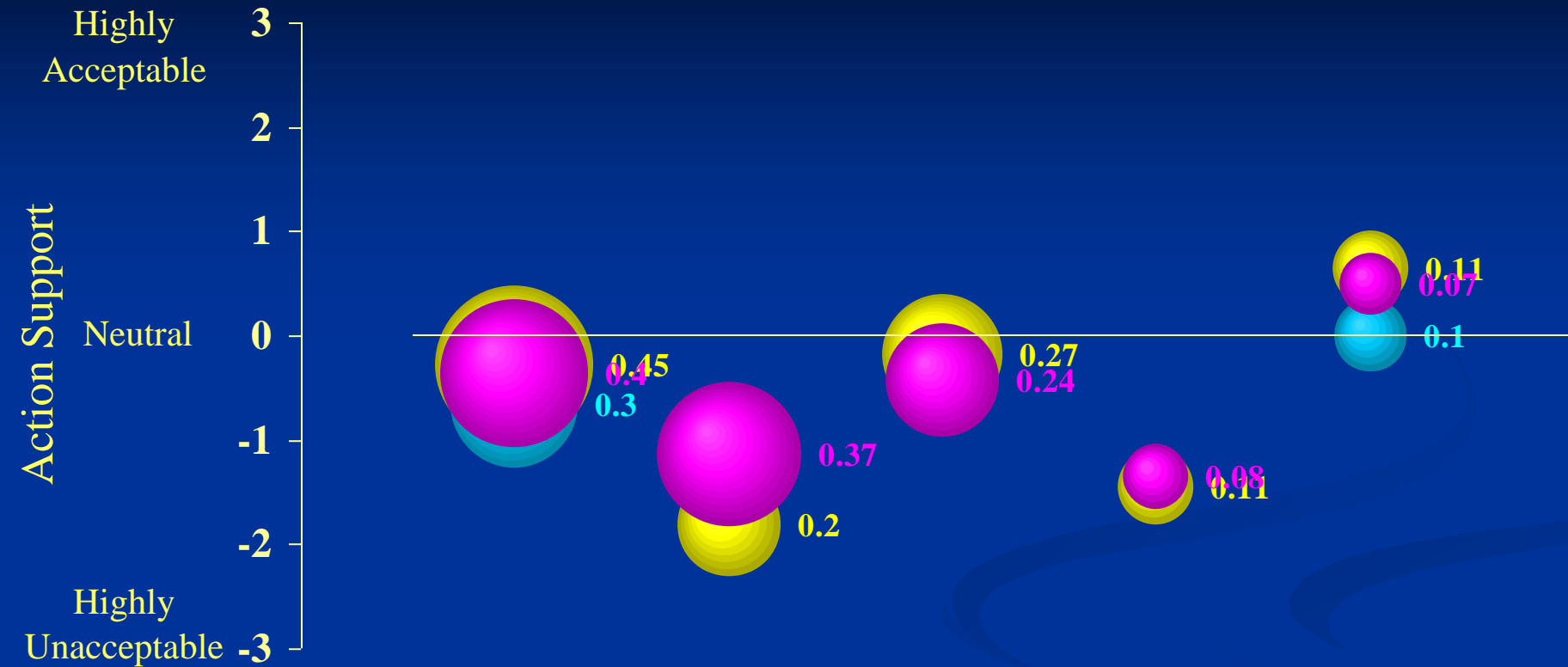
Swim  
Surf

Times of free reign

Current practices stay the same

- Beginner Response
- Intermediate Response
- Advanced Response
- Expert Response

# Beginner Skill Level



Surf/Swim at same time

↑ Swim  
↓ Surf

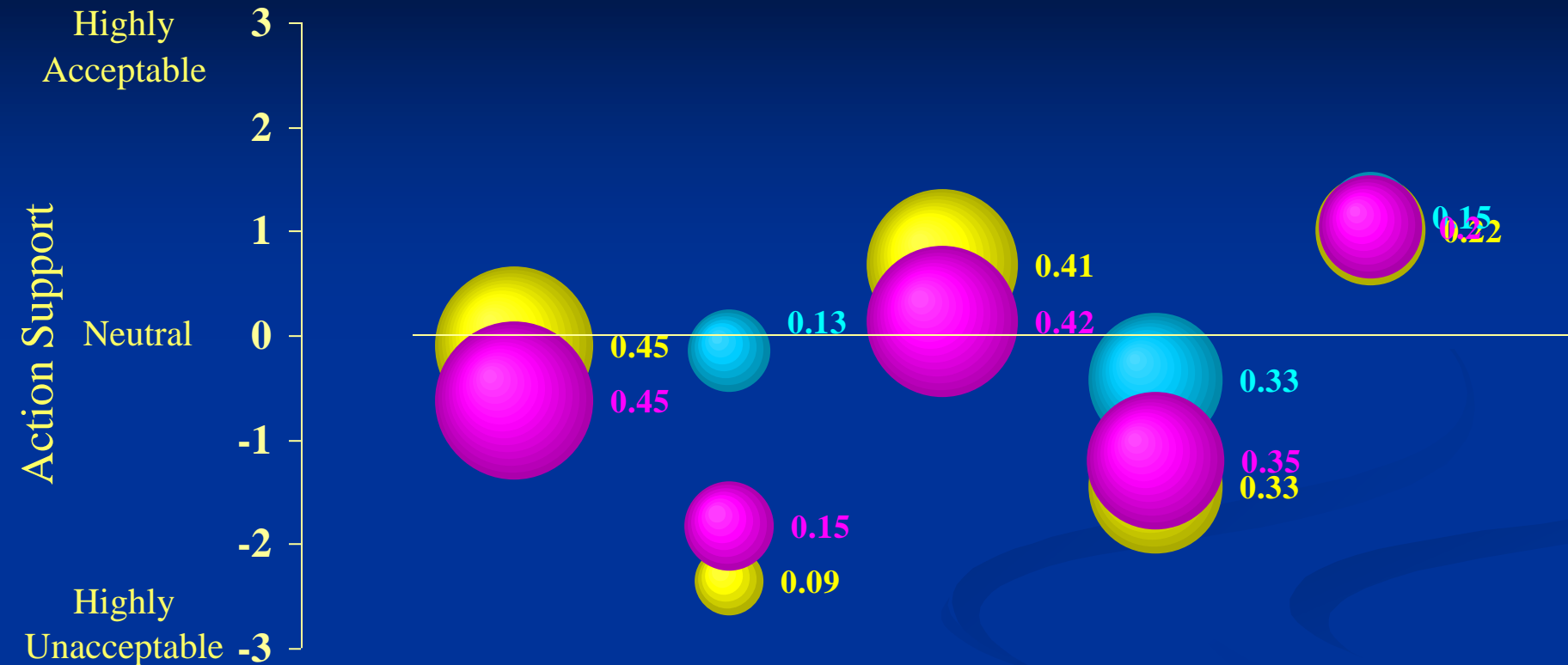
↓ Swim  
↑ Surf

Times of free reign

Current practices stay the same

● Surf Response
 ● Swim/Surf Response
 ● Swim Response

# Intermediate Skill Level



Surf/Swim at same time

↑ Swim  
↓ Surf

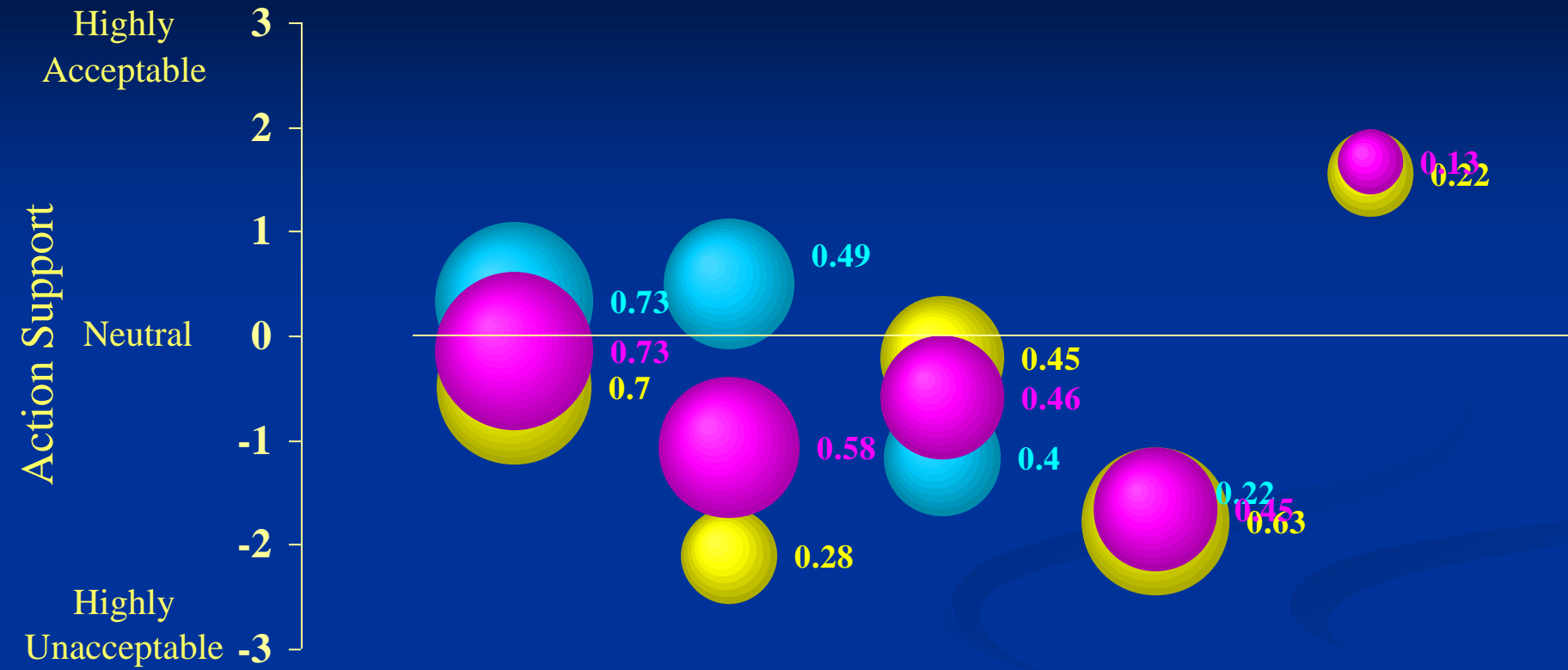
↓ Swim  
↑ Surf

Times of free reign

Current practices stay the same

● Surf Response   
 ● Swim/Surf Response  
● Swim Response

# Advanced Skill Level



Surf/Swim at same time

↑ Swim  
↓ Surf

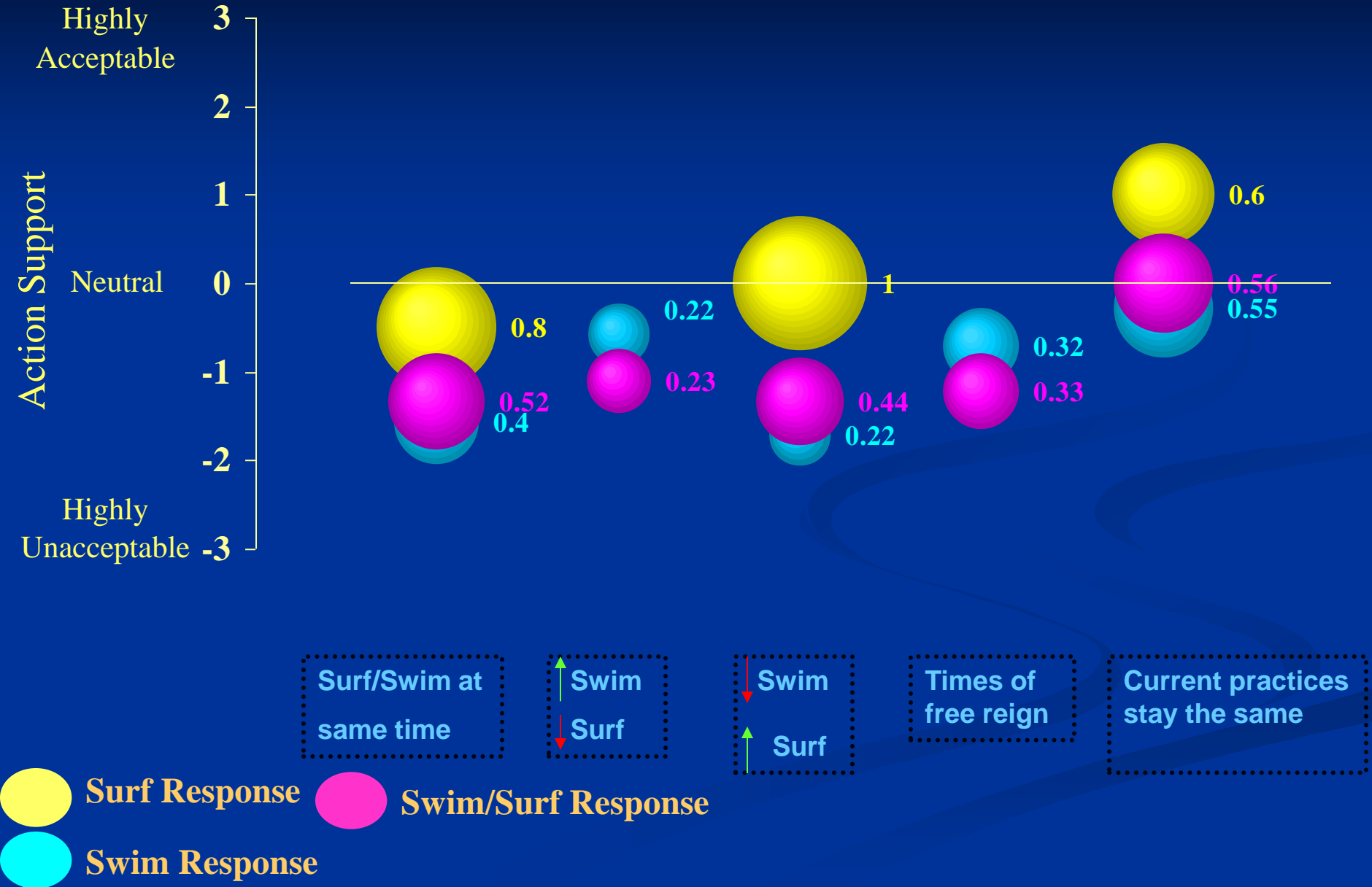
↓ Swim  
↑ Surf

Times of free reign

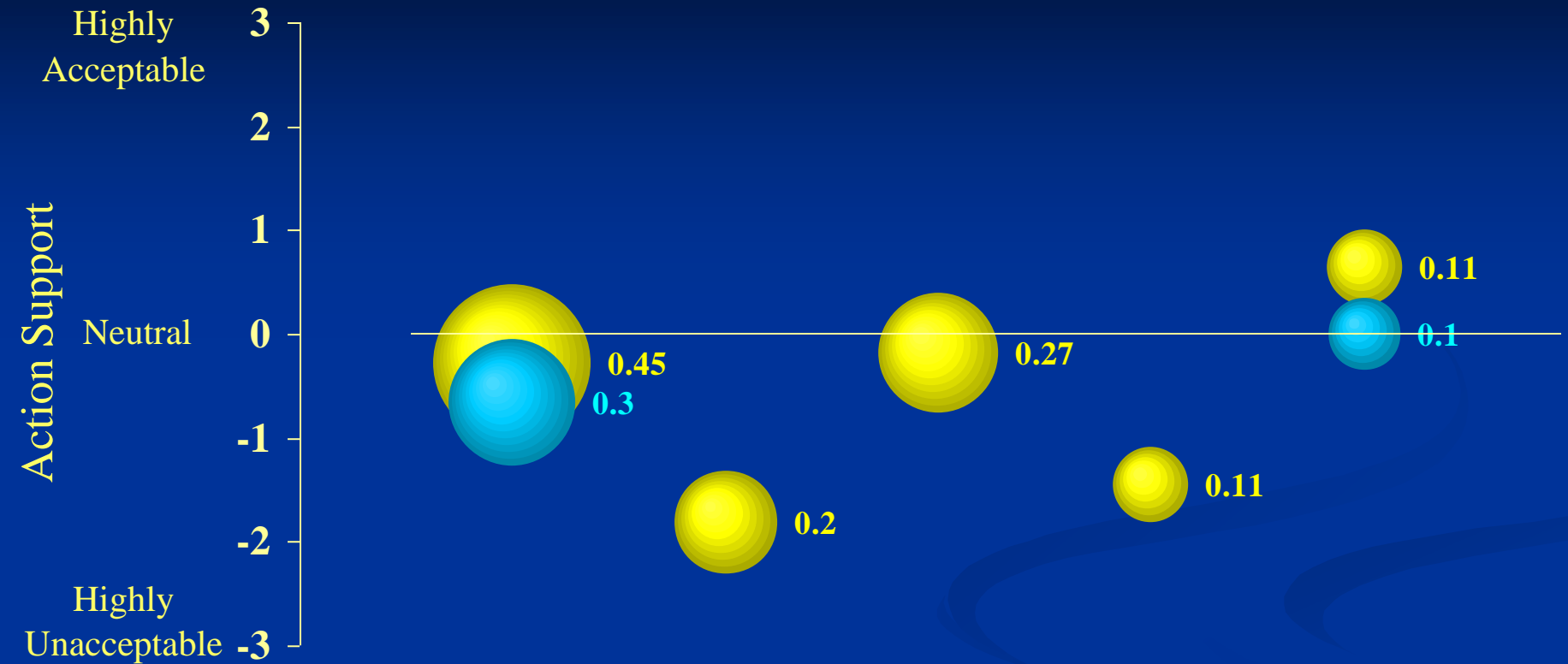
Current practices stay the same

● Surf Response   
 ● Swim/Surf Response  
● Swim Response

# Expert Skill Level



# Beginner Skill Level



Surf/Swim at same time

↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

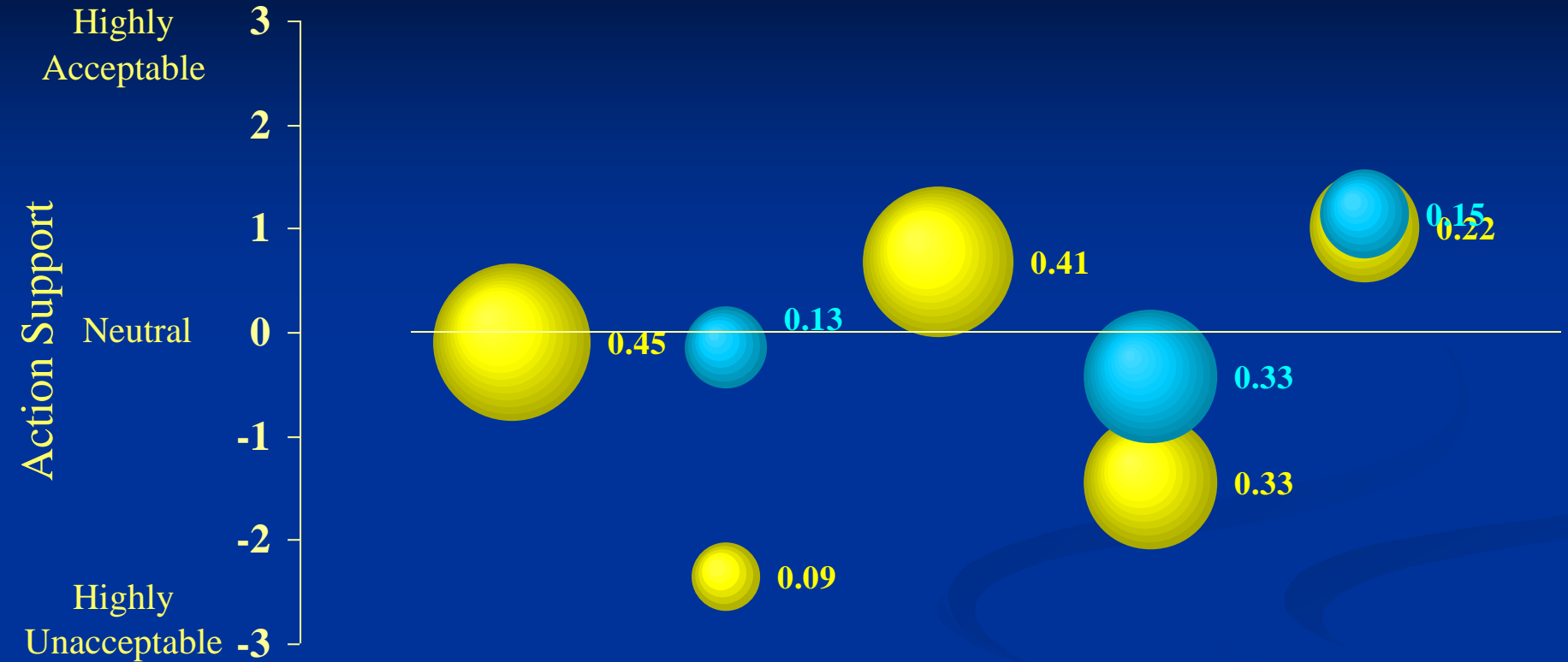
Times of free reign

Current practices stay the same

● Surf Response

● Swim Response

# Intermediate Skill Level



Surf/Swim at same time

↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

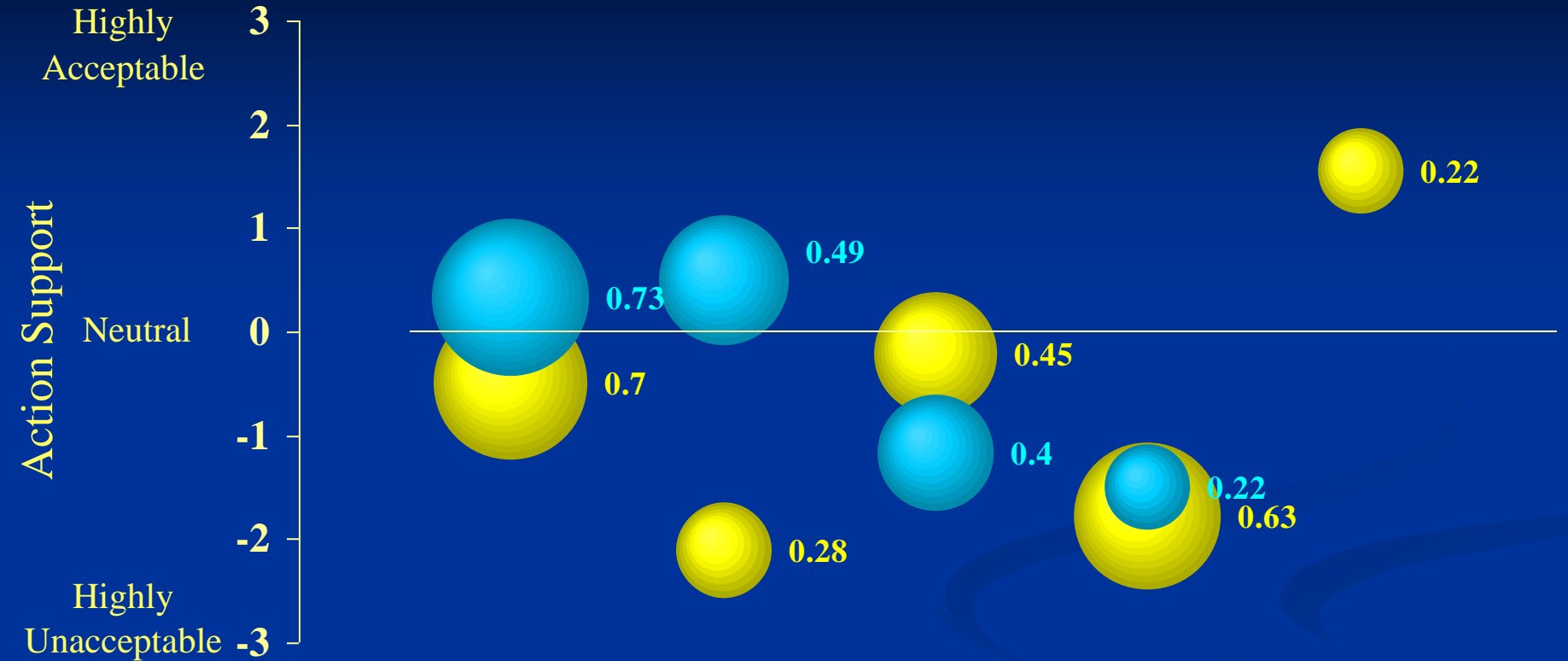
Times of free reign

Current practices stay the same

● Surf Response

● Swim Response

# Advanced Skill Level



Surf/Swim at same time

↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

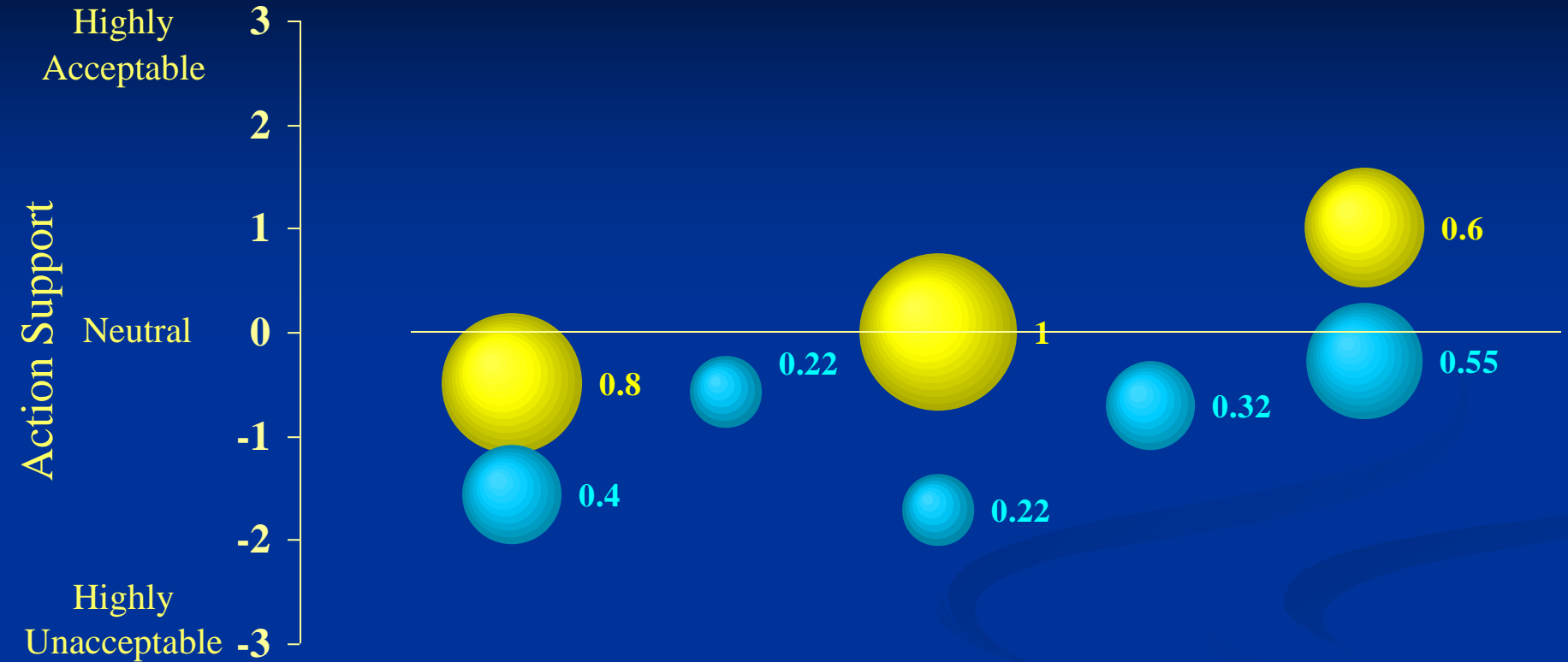
Times of free reign

Current practices stay the same

● Surf Response

● Swim Response

# Expert Skill Level



Surf/Swim at same time

↑ Swim  
↓ Surf

↓ Swim  
↑ Surf

Times of free reign

Current practices stay the same

● Surf Response

● Swim Response