

*Accord sur la Conservation des Cétacés de la Mer Noire, de  
la Méditerranée et de la zone Atlantique adjacente*



*Agreement on the Conservation of Cetaceans of the Black  
Sea, Mediterranean Sea and contiguous Atlantic Area*

**EXPERT STATEMENT ON  
"SWIM WITH THE DOLPHIN PROGRAMS  
AND DOLPHIN-ASSISTED THERAPY"**

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## **Expert-Statement**

***Subject:***

**“Swim with the dolphin programs”  
and “Dolphin-assisted therapy”**

*upon request of the*

**ACCOBAMS Secretariat  
Jardin de l’UNESCO, Les Terrasses de Fontvieille  
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## Dolphin Assisted Therapy (DAT)

In contrast to common animal assisted therapies with domestic animals, dolphins are not pets. They are predators and mostly captured from the sea therefore providing an ongoing discussion about the ethical and safety concerns of using free-ranging animals (Iannuzzi and Rowan 1991).

DAT has been employed for about 20 years to help mentally and physically disabled or terminally ill people. Since 1982 there has been a number of publications about dolphins-assisted therapy by several psychologists: The first piece of research was a case study in which dolphins were used to motivate an autistic child to communicate (Smith 1981). A further experiment indicated that children learned two to ten times faster and with greater retention when working with dolphins (Nathanson 1989). Also significant improvements in hierarchical cognitive responses occurred when interacting with dolphins in mentally disabled children (Nathanson & de Faria 1993). An improvement of the social situation in families with disabled children could also be observed (Voorhees 1995). Analysis of EEG showed that interaction with dolphins has a relaxing influence on humans (Cole 1996; Birch 1997). Effectiveness of short-term (Nathanson, de Castro & McMahon 1997) and long-term (Nathanson 1998) dolphin-assisted therapy for children with severe disabilities was presented. Based on a study with approximately 1500 patients, a positive influence on child's autonomic homeostasis and psychoemotional status could be observed (Lukina 1999). Furthermore, the presence of the dolphins seemed to alleviate the pain atopic dermatitis patients experienced while bathing in seawater. It could be shown that the skin condition improved dramatically, and immunologically, while serum IL-8 levels decreased (Iikura et al. 2001). A reduction of anxiety in organized tourists swimming groups in the wild was also observed (Webb and Drummond 2001). However, it is important to note that there also exists severe criticism that some of the studies used flawed data resulting in flawed conclusions (Marino and Lilienfeld 1998; Humphries 2003). Even if there are several criticisms which needs to be taken into consideration it could be concluded that the DAT seems to be a successful animal assisted therapy.

**However, until now no studies exist which prove or show any indications that DAT is more successful than other animal assisted therapies.** Generally there are many reasons given for the success of animal-assisted therapies, most of which are based on the effects of socializing, such as increasing trust or responsibility (Levinson 1984; Blue 1986; Wilson 1987; Friedman & Thomas 1985; Veevers 1985; Fine, 2000). Some of these mechanisms are certainly also valid for dolphins. But what could make a difference?

A very speculative hypothesis predicts that ultrasound from the echolocation clicks of dolphins may have a healing effect (Cole 1996; Birch 1997). Some psychological and psychosomatic illnesses are caused by dysregulation of hormones, an example of which is the biochemical model for autism (Chamberlain et al. 1990). Birch and Cole postulate that the ultrasound of dolphins has a mechanical and / or electro-mechanical effect on the endocrine system of humans and stimulates it positively. The resulting change in hormone concentration should be recognizable as an effect on the EEG (Cole 1996; Birch 1997). Birch and Cole showed that subjects' brain waves change significantly in frequency and amplitude after swimming with dolphins compared to the measurements before the swimming. There were no changes in the control group that swam without dolphins. They presented this "idea" at a conference in 1996 and since then, the public seems to want to believe this as a fact.

The effect of ultrasound on biological tissue is well investigated by medicine. The interest is due to the question of safety of ultrasound diagnostic methods but also in therapeutic treatments. All known use of therapeutic ultrasound in medical treatments requires repeated application with certain intensity and duration. The repeated application is a given by the DAT because the therapy takes place over the course of several weeks. The intensity of dolphins' ultrasound could be sufficient (Brensing et al. 2003). The reported duration for the medical application of ultrasound ranges from 30 min (Ryaby, 1991), 20 min (Ryaby et al. 1989), 15 min (Duarte, 1983; Yang et al., 1994), 3 min (Klug & Knoch, 1986) to at least 2 min (Reuter et al., 1987) per session. This means that patients have to be exposed to dolphins' ultrasound directed at them for at least two minutes per session. In our examinations at the "Dolphins Plus" in Florida, we observed that Dolphins preferred smaller humans to larger ones and that a single dolphin exclusively had a certain interest in patients (Brensing and Linke, 2004). Can this behavior really include therapeutic ultrasound emissions? The dolphin had about 1.5 minutes self-motivated close contact to patients during

the 30 minutes of therapy, but only in about 50 % of that time she was in the necessary position for an ultrasound application. The remaining application time of 45 seconds was divided among five or six patients, resulting in less than 10 seconds exposure time per patient. Therefore, we conclude that even if the dolphin produced ultrasound continuously with a maximum power of 230 dB, the application time of 10 seconds per patient is not long enough to be comparable to therapeutic ultrasound in human medicine. Moreover it seems to be practically impossible that a dolphin can produce ultrasound over several minutes with the maximum power directed to one certain patient. If this were indeed to occur, there would be a serious risk that the ultrasound could also damage the biological tissue (Brensing et al. 2003). Additionally, we observed that the heads of the patients were mostly out of the water, so that it is quite unrealistic to think that a hypothetical piezoelectric effect on the skull could have had an influence on the success of the therapy. Nevertheless, while it cannot be ruled out that dolphins use an unknown mechanism, the effects of ultrasound on biological tissue have been very well investigated over the last centuries, and it seems highly unlikely that there is such kind of unknown mechanism.

**Conclusion:**

- There is no proof that ultrasound has an impact on the therapy success.
- There are many good scientific reasons arguing why ultrasound should not have any impact under the DAT conditions (Brensing et al. 2003).

But can the “assisting” behavior of these single dolphins explain the success of the therapy? We believe that this naturally motivated behavior can be easily reinforced, and that dolphins are therefore easy to motivate to assist the therapists and trainers.

Another difference to other animal assisted therapies is the combination with the water environment (Hydro Therapy). An alternative to that could be the so called “dog water therapy”. In this therapy, dogs (a special kind of Newfoundlander, the Landseer) would be in the water assisting the therapists.

## **Swim With The Dolphin Programs (SWTD)**

SWTD programmes are proliferating throughout the world but are unregulated. The only country, which developed standards to regulate swimming interactions between humans and dolphins are the United States. Unfortunately, this standard was suspended on the effective date of April 2, 1999 (APHIS 2001).

There are still not many quantitative studies about the impact of swimmers on the social behaviour of dolphins (Spitz 1993; Samuels and Spradlin 1995; Frohoff and Packard 1995, Frohoff 1996, Kyngdon et al. 2003; Brensing and Linke 2004; Brensing et al. 2005). This is surprising because (as far as I know) the SWTD programs are the only commercialized interaction between humans and potentially dangerous zoo animals; where humans are allowed to move freely in the pen of the animals and where close body contact is not controlled.

Primarily the SWTD programs take place in two different settings:

- The structured programs - where dolphins are always under the trainer’s control and interaction with humans is mostly connected to food.
- The unstructured programs - where dolphins and humans swim together in the pen. (trainers are only observers and no feeding is involved)

Since trainers have a very high impact on the dolphins particularly in structured programs (Frohoff and Packard 1995 and Samuels and Spradlin 1995), it is unlikely that these dolphins act in a self-motivated manner. Because of this, potential effects of swimmers on the behavior and social structure of the group of dolphins are more likely to be observed in the unstructured programs. For this reason, our focus was on the unstructured SWTD programs. We observed 83 sessions with five dolphins at "Dolphins Plus", USA, and 37 sessions with 13 dolphins at "Dolphin Reef", Israel, during unstructured swim-with-the-dolphin programs. Both facilities are fenced sea pens with ocean water. Our detailed observations focused on contact and distance behaviour between dolphins and amongst dolphins with different groups of human swimmers, namely adults, children and children with mental and physical disabilities at "Dolphins Plus" (Florida) and adults at the "Dolphin Reef" (Israel).

Observation at the "Dolphins Plus" D+

In contradiction to the expectation of the tourists, our findings showed that dolphins seek great distance with humans. Adding this fact to the findings that the dolphins dive deeper in presence of swimmers, we could conclude that the dolphins avoid the swimmers. Avoidance, for example, is considered to be the most important stress related behavior during interactions with dolphins and humans (Frohoff 2000). We observed an increase of rousing which is accompanied by higher metabolism rates and the intensification of a subgroup. These are convincing indications to assume that dolphins were stressed by swimmers. However, if dolphins are stressed it increases the risk of injury for swimmers (Samuels and Spradlin 1995).

Observation at the "Dolphin Reef" DR

Dolphins at DR were attracted to areas where swimmers were present. First, they were present significantly longer in the entry area when swimmers were present. Second, the dolphins were significantly longer in close proximity to moving groups of swimmers than expected by chance. And third, despite the lack of detailed observations at DR (due to the size of the enclosure) the dolphins at DR were observed to be in close body contact with unknown swimmers, which was never observed at D+.

Although it is difficult to compare observations from an area of 14,000 square meters (DR) with those from an area of 600 square meters (D+) and although the methods of our investigations are not comparable, it is possible to compare our conclusions. We conclude that the dolphins at DR were attracted by swimmers, while those at D+ were not. Why do these observations contrast? The most likely reason for our contrasting results and conclusions is the difference in housing and handling conditions. First of all, the size of the enclosure at DR is more than 20 times larger than the pen at D+. In addition, the enclosure at DR is divided (not materially) into three parts as recommend in the bill of APHIS (2001). These consist of an entry area, an area where dolphins and humans can interact, and a huge refuge area which is not entered by humans. The opportunity to enter a refuge area was rated to be an especially important contribution to the animals' welfare while gates seemed to be a handicap (Frohoff 1996). It could be observed that dolphins supplied with a proper refuge area, prefer this area and reduce aggressive, submissive, and abrupt behavior during SWTD programs and that swimmers seemed to have no detrimental effect (Kynngdon et al. 2003).

## **Conclusion and Recommendation**

There is still no proof that DAT is more successful than other animal assisted therapies and the question must be asked: Why should we use dolphins if domestic animals work as well? Especially since aggressive behavioral patterns like hit, chase, ram, forceful push or even bites have been observed (Samuels and Spradlin 1995; Frohoff and Packard 1995).

SWTD programs and especially the DAT are businesses which are growing all over the world and expansion from pens to tanks is likely to occur. However, an extension to tanks would involve an additional serious risks of infections and parasitism (Geraci and Ridgway 1991) for both interacting parties. To minimize this risk, most oceanariums have to increase the concentration of chlorine, which can result, for example, in irritation to eyes and skin.

Considering the risks on both sides, I strongly recommend setting up guidelines and rules for housing and handling conditions (as suggested in APHIS 2001), in which interactions between humans and dolphins can take place safely.

## Comments on the Delphus paper

I personally find it quite hard to make comments on this paper due to a lack of background information and details. This is why all my comments are more or less scientific and my request is to handle it as unofficial.

### OCEANOGRAPHER FRANCISCO TORNER

"The aim is to give each region and each visitor as exact an idea as possible of the marine life of this region."

- I believe that this aim is not very realistic for belugas.
- In case of the dolphins' housing conditions, I cannot see any similarity between the concrete tanks and the open ocean.

### DELPHINOTHERAPY

"Establishment, WITH DOCTORS, ..... by dolphins could influence the hypothalamus."

- Scientific research on this subject is certainly important, as I also thought about those kinds of experiments. However, I would suggest using the same settings during other animal assisted therapies. Positive results are not surprising and I expect them from both settings (dolphins and other animals). Certainly, I presuppose that the research is made in the respect to the criticism (Marino and Lilienfeld 1998; Humphries 2003).

### VISIT OF THE PARK

#### BELUGAS

"One aim of the study is to establish a link between the sound emitted and behaviour and also to understand how the belugas communicate between themselves."

- As widely recognized, the study of a communication system between two single captive animals in an artificial environment is not very promising.
- I also see a risk of these two animals being used in the DAT, as done in Kas (Turkey). That would be another example for the possibility of using belugas in the DAT. Besides the fact that belugas look nice, have small teeth and have a kind of mimic - which all make for a convincing argument to use them in the DAT, there is still the problem that patients need warm water and belugas cold.

### DOLPHINOTHERAPY BRANKO WEITZMANN

....."We observed the outcome of the sessions noting that the dolphins played freely, they were not fed and that contact was made as soon as the children were near.".....

- This seems to be a good example for a close relationship between trainers and captive dolphins.

....."She then took her child to Eilet where a lot of money was also necessary and the dolphin was seen only three times".....

- This is not surprising because compared to Mondomar, the Dolphin Reef is an enriched nature area with a depth of nearly 20m (max.). That means that dolphins have different kinds of "entertainment" therefore not being dependant on the interaction with humans.

....."However, after only two sessions at Mondomar, the child was able to straighten up."....

- Something like this is possible but could very well be a coincidence.

### MUNDOMAR KEES DE GROOT RENE DUSS BRANKO WEITZMANN

7 Dolphins cannot be forced to act against their will.

- There is no proof of this statement

11 A Good Conduct Charter already exists: there is no need for further regulations.

- I absolutely disagree as mentioned above.

16 Dolphinotherapy in the open sea in Europe is not practical.

- There is no justification or scientific reason to believe that SWTD or DAT are more suitable in tanks.

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