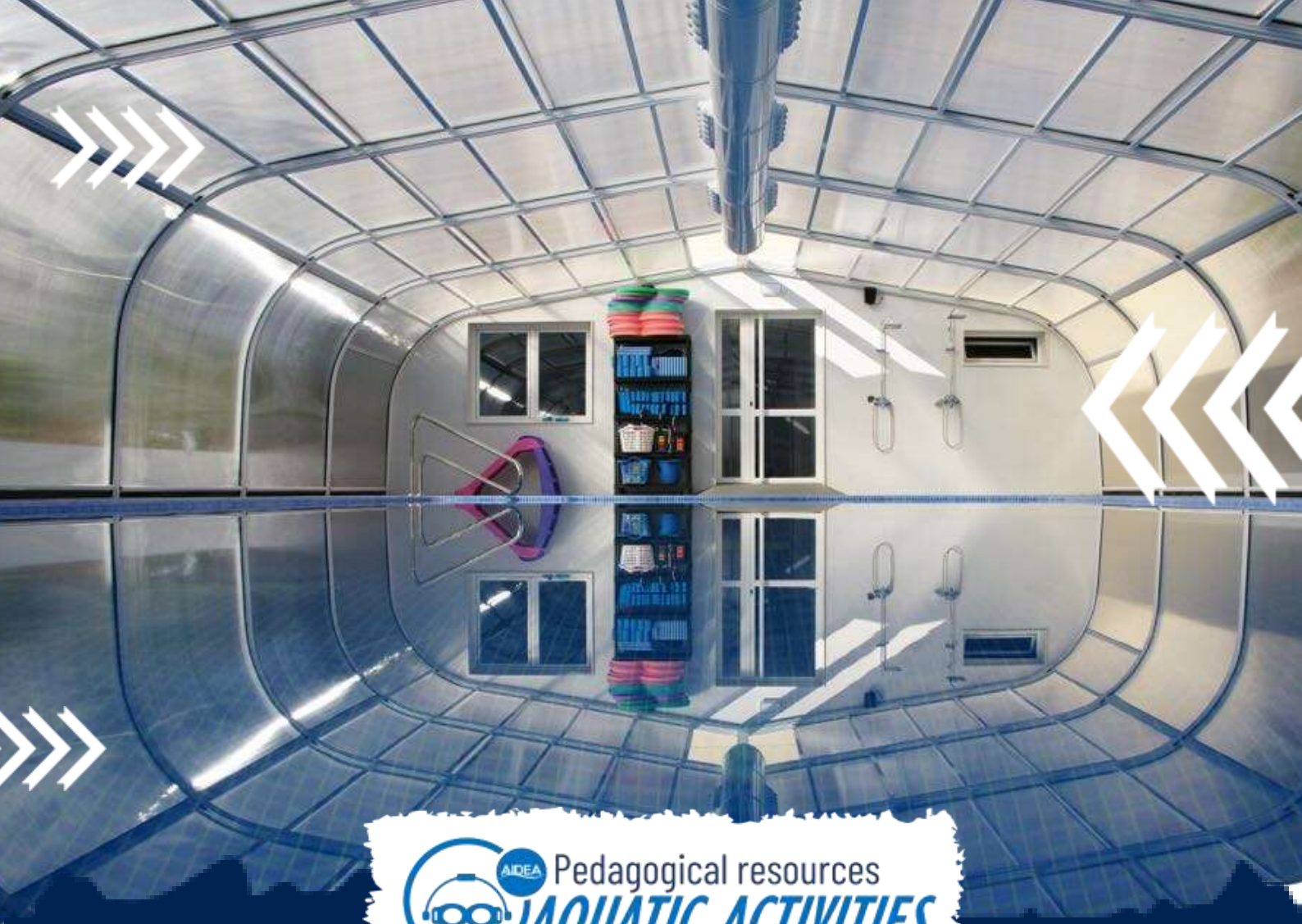

Pedagogical resources
AQUATIC ACTIVITIES

WHICH CONDITIONS ARE NECESSARY TO ACHIEVE AQUATIC STIMULATION IN BABIES AGED 0-3 MONTHS IN A SWIMMING POOL?

José Miguel de la Torre Cobo

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WHICH CONDITIONS ARE NECESSARY TO ACHIEVE AQUATIC STIMULATION IN BABIES AGED 0-3 MONTHS IN A SWIMMING POOL?

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Aquatic stimulation sessions for babies require specific conditions to ensure safety. The ambient and water temperatures, hygiene of the space, water quality, etc. cannot be left to chance.

Introduction

Human body temperature is a vital indicator of health and is maintained within a relatively narrow range thanks to a process called **thermoregulation.**

The commonly accepted average human body temperature is 37 °C (98.6 °F). Nevertheless, this usual body temperature can vary slightly between individuals and depend on factors such as age, physical activity, or time of day, ranging from 36.5 °C to 37 °C. This includes babies, who also tend to have a slightly higher temperature.

Other differences include the fact that temperature is lower in the morning, reaching its peak in the afternoon or evening, and that in women, temperature varies depending on hormonal cycles.

This educational resource aims to clarify the minimum and regulatory conditions that any swimming pool must meet to offer aquatic stimulation programmes for babies in their first months of life.

How is temperature regulated (thermoregulation)?

The human body has complex mechanisms for maintaining a constant internal temperature, a process known as homeostasis. The hypothalamus, a small region of the brain located below the thalamus and above the brainstem, whose function is to be the “control centre” for many essential bodily functions, acts as the body's “thermostat”, receiving and processing information from temperature receptors and activating the necessary responses, that is to say, setting in motion mechanisms to dissipate heat (vasodilation, sweating or reduction of cellular metabolism and muscle activity), or to generate or conserve heat (vasoconstriction, increased muscle contraction with

shivering, increased cellular metabolism or piloerection).

What is the ideal temperature of the swimming pool's water for aquatic stimulation with babies aged 0-3 months?

The ideal temperature of water for young infants should be above 32 °C due to several reasons:

- Based on the body temperature previously established, a range of 32-34 degrees allows the baby to remain awake and in an optimal state of alertness to stimuli and proposed activities. A higher water temperature will not sufficiently activate attention, perception, or orientation skills, because it will be too relaxing and similar to a bath at home in the bathtub.
- Due to the process of thermoregulation, this water temperature, which is 4-5 degrees lower than body temperature, will also enable the baby to increase their body temperature with minimal physical activity and thus remain physically, cognitively and sensorially active to obtain information from the stimuli.
- To avoid "thermal shock". A water temperature below 32 degrees will cause the baby to invest their energy in mechanisms to generate or conserve heat, as mentioned above, which will prevent them from remaining comfortable and engaged in the session, and as a result, they will not participate. In addition, it will cause the adult to make protective gestures to generate heat and prevent further cooling of their body.

Some international organisations recommend a minimum temperature of 32 degrees for aquatic stimulation programmes for babies a few months old. The American Academy of Paediatrics (AAP, 2019) suggests that the ideal water temperature should be between 32 °C and 34 °C (89.6 °F to 93.2 °F). This temperature helps prevent hypothermia and provides a comfortable and safe environment for the baby. Similarly, the Royal Life Saving Society UK and the Swimming Teachers' Association (STA) in the United Kingdom recommend a minimum temperature of 32 °C for babies under 12 months, and preferably 33 °C to 34 °C for newborns and babies under 6 months.

Conditions of the water in swimming pools for aquatic stimulation for babies. Spain's current regulations

Aquatic stimulation for babies offers numerous benefits for the baby's physical and emotional development, making it a highly valuable activity. However, given that newborns have a more vulnerable immune system and more sensitive skin, the water quality in these facilities must be impeccable, and the hygiene of the facilities must be

of the highest standard. Below are the mandatory requirements and essential recommendations to ensure a safe and healthy environment.

Microbiological quality and essential chemical parameters

Each country has its own legislation in this area. Focusing on the case of Spain, Royal Decree 742/2013, of 27 September, establishing technical and health criteria for swimming pools, continues to be the main national regulation in Spain governing water and air quality in swimming pools. This Royal Decree was published in the BOE (official state report) on 11 October 2013 and remains in force.

Although Royal Decree 487/2022, of 21 June, establishing health requirements for the prevention and control of legionellosis, does not replace RD 742/2013 concerning swimming pools, it does introduce a broader and more up-to-date framework for the prevention of Legionella in facilities that can generate aerosols, including **all types of swimming pools for collective use (indoor or outdoor)**. Therefore, its principles are directly applicable and complementary in aquatic stimulation facilities for babies.

RD 742/2013 adopts a more specific approach to health and hygiene conditions, and RD 487/2022 complements this by requiring that the water in pools be free of pathogenic organisms and substances in concentrations that pose a risk to human health. This involves rigorous control of several parameters:

Residual disinfectant: the water must contain a residual disinfectant that can vary between:

- **Residual free chlorine**: the value must be between **0.5 and 2.0 mg/L**. For swimming pools designed for babies, the recommended **chlorination** level ranges between **0.5 and 0.6 mg/L**, which is lower than that of adult pools to avoid irritation to babies' sensitive skin and eyes, while ensuring disinfectant power.
- **Residual combined chlorine (chloramines):** it must not be higher than **0.6 mg/L**. Chloramines are by-products of chlorine disinfection that can cause irritation and respiratory problems. This value must be as low as possible in pools for babies. If it exceeds 3 mg/L, the pool must be closed and thoroughly ventilated.
- **Bromine:** if bromine is used as a disinfectant, the parametric value must be between **2 and 5 mg/L**.
- **Salt:** if salt is used as a disinfectant and purifier, the parametric value must be between **4 and 5 ppm (parts per million).**
- **Isocyanuric acid:** if used, it must not exceed **75 mg/L**.
- **pH:** pH level must be kept within a strict range of **7.2 to 8.0**. A pH outside this range can reduce the effectiveness of the disinfectant and cause irritation. If the values are below 6.0 or above 9.0, the pool must be closed until normalised.

Turbidity: water should be crystal clear, allowing you to see the bottom of the pool clearly. Turbidity may indicate the presence of suspended particles that can harbour microorganisms. The value should be **less than 5 UNF**. If it exceeds 20 UNF, the pool

should be closed.

Legionella control: although **RD 487/2022** does not specifically address water quality in swimming pools, it focuses on legionellosis, and its principles of temperature control and disinfection apply to all facilities that generate aerosols. This includes, of course, heated swimming pools and especially those with hydromassage systems or agitation and recirculation, which are common in aquatic stimulation facilities. It is crucial to avoid conditions that favour the survival and multiplication of Legionella by controlling the water temperature and ensuring effective disinfection. The main implications for these swimming pools are: r**isk assessment and legionella prevention and control plan** (all facilities of this kind must have an up-to-date WMP, which identifies critical aspects and establishes the necessary control measures); **temperature control** (although RD 742/2013 already sets temperatures for comfort, RD 487/2022 reinforces the need for temperature control in all facilities to prevent the growth of *Legionella*. Even if this bacterial disease develops in temperatures ranging from 20-45 °C, the high temperatures of baby pools (32-34 °C) fall within the risk range, so continuous disinfection is essential); c**ontrol parameters and measurement frequency** (RD 487/2022 extends the limits and measurement frequency of certain control parameters in sanitary water systems, including pH, biocide and temperature (daily), as well as turbidity (weekly). Although RD 742/2013 already establishes sampling for swimming pools, the focus of RD 487/2022 on *Legionella* prevention may require greater diligence in monitoring); s**pecific microbiological analysis** (*Legionella spp*. and aerobic analyses must be carried out by authorised laboratories, especially if conditions exist that could favour their proliferation).

Water and ambient temperature

Maintaining an appropriate temperature is crucial for the comfort and safety of babies, who have different thermal regulation than adults.

Water temperature: RD 742/2013 establishes a general range of **24 °C to 30 °C** for heated pools. However, for babies, a higher and more specific temperature is recommended, ideally **between 32 °C and 34 °C**. This prevents the

risk of hypothermia in babies and ensures a pleasant and comfortable experience. There is a difference here between the recommended and mandatory situations, a challenge that persists over time and for which it is important to find a solution.

Ambient temperature: the air temperature in the heated room housing the pool should be kept **between 1 °C and 2 °C above the water temperature**. This prevents sudden changes in temperature when entering and leaving the water, minimising the risk of colds.

Relative humidity: it should be below **65%.** This minimises thermal shock when entering and leaving the water and reduces condensation.

Carbon dioxide (CO2): in indoor swimming pools, the concentration of CO2 in the air in the enclosure shall not exceed **500 mg/m³** of the CO2 in the outside air, to ensure good air quality.

Safety, facility hygiene and preventive measures

It is highly recommended that pools used for aquatic stimulation of babies be **exclusively for them**, not shared with adults or older children for general recreational purposes. Beyond water quality, facilities must meet strict hygiene standards:

Recirculation and filtration systems: water must be constantly recirculated, filtered, and disinfected before returning to the pool. **Overflow pools** are an excellent option, as the water overflows over the edge, helping to maintain greater cleanliness and reducing the accumulation of impurities.

Use of appropriate swimwear: babies should wear swim diapers or swimsuits that are very tight-fitting and well-fastened at the thighs to prevent excrement from leaking into the water.

Mandatory showers: both babies (if their age allows) and adults should shower before (and after) entering the water to remove creams, oils and particles that may affect water quality. Showering also helps to maintain a routine of hygiene and good practices for everyone before starting water activities.

Regular cleaning and disinfection: facilities must be cleaned and disinfected frequently (if possible, daily and constantly), including pools, pipes, and filters, as stipulated in current regulations.

Non-slip material and safe access: the areas around the pool must have non-slip

surfaces to prevent falls. The depth of the pool must be suitable for babies and have safe ramps or steps.

Additional aspects and recommendations

In addition to the hygienic conditions of the facilities, the health determinants of the water, and the safety aspects of the swimming pools mentioned above, there are a number of other equally essential factors that must be met to ensure that aquatic activities are optimal and safe:

Constant supervision and company: adult supervision is always mandatory and constant in cases where the aquatic session does not allow parents to enter the water. In centres where parents are allowed to accompany their babies in the water, direct contact and company are mandatory.

Schedules and environment: it is recommended to avoid peak times to minimise noise and stress. The environment should be calm and welcoming, possibly with soundproofing materials. Likewise, whenever possible, high temperature times or those that coincide with babies' sleep or feeding times, or moments of low activity (e.g., 1:00 p.m. or 8:00 p.m.) should be avoided.

Post-swimming hydration: after the session, it is important to shower the baby with fresh water to remove chlorine or salt (or any other elements present in the water), dry them thoroughly, paying attention to skin folds, and apply moisturising lotion if necessary.

Complying with these conditions is not only a legal obligation, but also a fundamental responsibility to ensure that aquatic stimulation is a safe, beneficial and enjoyable experience for babies and their families.

Conclusion

Aquatic stimulation for babies is a wonderful activity, but it requires an absolute commitment to health and safety. Strict compliance with **Royal Decree 742/2013** and the application of the preventive measures established in **Royal Decree 487/2022** are the basis for ensuring that water hygiene conditions are optimal, creating a safe, comfortable and beneficial environment for the development of young children. Investment in constant quality control and proactive hygiene and health management is essential for the success and reputation of any facility dedicated to this activity.

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