ASCTA Facility Audit
Facilities and Amenities [FA];Temperature [T]

Version 3.5

FAT 1.0 Preamble

The presence of moisture causes rapid heat loss from the body. To a degree, air and water temperature determine whether a patron's experience in an aquatic facility is positive or negative.
Children are particularly susceptible to the impact of air and water temperature.
What the ideal air and water temperature is, will vary depending on the activity, however air and water temperatures approaching ideal will improve patron comfort and thus be a factor in determining the duration of any formal or informal aquatic activities.
Air and water temperature and wind speed will thus determine the level of patronage, ergo in the medium term encourage greater participation and in the long term improve financial viability of an aquatic facility.

Increasing pool temperatures has an effect on pool maintenance. Higher temperatures mean higher rates of water evaporation. Thus more water will be consumed to maintain adequate water levels in the pool for filtration.

High temperatures and high evaporation rates also lead to a faster use of chlorine and/or other sanitizing agents from the pool water. Algae also love to grow in warmer temperatures, making it necessary to vacuum and clean the pool more often.

An unsanitary pool leads to the spread of disease and illness and an adverse impact to all aquatic facility users.

This document provides the Australian Swimming Coaches and Teachers Association's agreed position (our policy) in regards to temperature after industry consultation and peer review.

An ideal water temperature range is recommended, but ultimately common sense as to what is the best comfort level for the majority of patrons should prevail. To create an ideal temperature is difficult as a high air temperature will make a warm pool feel cool or a cool pool feel warm if the air temperature is cold and that the "weather" circumstances can change quickly!

Variables such as the intensity of the activity, body composition, sensitivity to temperature, wind chill, air temperature, sky conditions (sun, cloudy etc.) all determine the perceived comfort/ discomfort level. Therefore, the suggested minimum and maximum water temperatures provided are a only a guide for the majority of situations encountered.

FAT 2.0 Reccomendations

FAT 2.1 Water

In warmer water, Chlorine and other disinfectants used to kill germs break down faster. Many bacteria and viruses thrive in warm conditions and the cost of heating any higher than necessary rises exponentially.

Expert opinions vary as to the exact ideal water temperature for various activities. Air temperature can also have a major impact on what is comfortable as a water temperature. If air temperature is controllable it should be around two degrees warmer than the water temperature.

Some aquatic facilities will "cycle" their water temperature up and down throughout the day so that the warmest time is when lessons for babies and toddlers are conducted and then as the pool cools down the patrons who require relatively cooler water such as squad swimmers attend.

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The table below provides ASCTA's considered recommendations based on average activities and age groups as per the Swim Australia™ Teacher course recommendations.

Age/ Activity	Ideal Water Temperature	Suggested minimum	Suggested Maximum	Notes
Babies and Toddlers *	31 - 33	30	34	Judge by feedback on comfort level
Learners *	28 - 31	27	33	Lack of movement and wind are factors
Junior Squads #	28 - 30	26	32	# based on 45 minutes to 1 hour session
Competitive Swim Meets	25 - 28	22	31	FINA specify 25 - 28
Open Water Swimming	22 - 26	16	31	FINA specify a range of 18 - 31 with a minimum of 16 for open events and 18 for masters events
Aquatic Activities	26 - 30	22	30	
General / compromise	28 - 31	26	32	
				* = 1/2 hour lesson duration
All are in degrees celcius based on an accurate reading in the pool away from inlets and outlets				

It should be noted that learners constantly in a temperature-controlled environments may develop "warm water dependency" and not cope or respond well when suddenly or unexpectedly immersed in cold water. Sudden immersion in extremely cold water can result in cardiac arrest.

Swimming and water safety Teachers should expose learners to a range of water temperatures and other experiences in a controlled manner that mimic those likely to be encountered in real life.

In "warm pools" and spas it is suggested that alternate sanitisers such as Chloramination, UV, Ozone, Chlorine Dioxide, Bromine or microfiltration may be more conducive to effective water sanitisation.

FAT2.2 Weather

Weather obviously affects the water and air temperatures and thus patrons as discussed in Hypothermia and Hyperthermia.

Beyond this, variations in the weather conditions such as hot or cold days, wind, rain, thunderstorms, lightning and hail can create factors that Aquatic Facility Operators need to be aware of and possibly respond to. Refer to the ASCTA Inclement Weather Policy for detailed recommended responses.

Seasonal variations and changes also create factors that may require attention by Aquatic Facility Operators.

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The following table provides some weather situations, potential hazards as a result and appropriate responses for Teachers.

Situation	*Hazard*	*Problems*	*Response*
Hot weather	Hot pool surrounds	Children run, feet burnt	Provide shaded areas, place soaky hose on pool surrounds, splash water on pool deck, wear thongs to pool edge
	Dehydration	Dehydration	Drink water regularly, have personal water bottles on pool edge
	Hot metal pool fittings	Hands burnt, children cannot hold on	Be aware, use water to cool down rails before use., shade entry areas
	Hyperthermia	Increased body core temperature	See hyperthermia section of this policy
Cold weather	Indoor pools	Getting cold after exiting water	Warm shower if possible, dry head first, wear a bathing cap, dress for outside weather conditions
	Colds & flu	Spreading to others	Exclude from water/ contact with others whilst symptoms persist
	Hypothermia	Reduced body core temperature	See hypothermia section of this policy
Wind	Flying debris	Injury	Secure or put away all items around the pool
	Wind Chill	Reduced body core temperature	See hypothermia section of this policy
Rain		Unpleasant, difficult to hear	Provide weather-proof area over pool, put away any clothing etc. in dry areas, provide verbal instructions before entering water
Thunderstorms	Lightning and loud noise	Electrocution, frightened Children	Exit water to a dry secure place away from metal surfaces when flash to bang time lag is 30 seconds or less and wait for at least 30 minutes after storm has passed before re-entering water
	Hail	Impact injuries	Exit water to hard shelter area such as change rooms
Anytime	Envenomation	Snakes, spiders, centipedes, etc.	Many animals are more active in hotter or wetter weather and can often be found still alive in pool environs including in the water. Pools should be closely inspected before entering

FAT2.3 Air

The recommended air temperature in controllable environments is 20 Celsius above the water temperature. This helps resolve issues related to condensation, corrosion and ensure a comfortable learning environment for Children. Change rooms should also ideally be warm or ambient rather than cool.

People lose body heat much quicker when the skin is moist or wet than when it is dry.

In an indoor aquatic environment there should be some air flow over the surface of the pool (often regulated in building codes), but inappropriate high air flow levels and breezes may come from:

- open windows
- open doorways
- doors opening when people enter and exit
- air conditioning outlets not positioned well
- ineffective or insufficient closing of gaps in the building construction

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Strategies that can be implemented to reduce air flow:

- close windows and doors
- use doorway "curtains"
- redesign or add a double door opening
- redirect air conditioning outlets
- infill gaps
- move the class location to a protected area
- add wind barriers or diffuses such as window and door screens, redirection vents on air conditioning

Caution should be taken to allow for some air flow to building code standards to remove chloramines and to refresh the air for spectator comfort.

In outdoor environments, wind and breezes can be reduced by:

- design features like physical barriers (fences, earth mounds, spectator stands, buildings etc.)
- staying in the lee of buildings that shelter from the direction of the wind
- placing clear plastic drop curtains from shade shelters over pools

FAT3.0 Background:

Some factors to be aware of are:

- the differential between water temperature and body temperature is usually great
- water subtracts heat from the body more quickly than air (approximately 4 times quicker and rising up to 30 times quicker with a wind chill factor)
- people in water generally do not have good thermal protection
- younger and smaller children and the elderly often have less body core mass and proportionally a greater skin surface area exposed to water
- very young children and the elderly generally move less and therefore generate less body heat
- changes in body temperature reduce a person's ability to focus on a particular task
- changes in body temperature reduce the desire to move the limbs

The ideal environment (in a temperature context) should be controllable, constant and predictable.
To achieve an ideal temperature on a consistent basis requires an indoor and temperature controlled (heated) space, however there are many ways of achieving good results in outdoor environments utilising some of the strategies documented further on in this policy.

FAT3.1 Hyperthermia

If a person is going to be in the water for an extended period of time, hyperthermia or hypothermia can become an issue.

FAT3.1a What is the difference?

Hyperthermia is a condition occurring when the body retains excessive heat, often commonly referred to as heat stroke or sunstroke. It is usually preceded by heat exhaustion, characterised by general lethargy, dehydration, increase heat of the body extremities and headaches.
A mild form of this can occur in very warm water such as an indoor heated pool or spa pool where Babies and Toddlers are being taught. The condition is further exacerbated by a lack of rehydration. The person should be removed from the water, and slowly cooled and rehydrated if possible. Mild cases can be helped by cool showers or staying wet and

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sitting in front of a fan to decrease the body temperature but extreme cases will require immediate hospitalisation.

Prevention outdoors can be assisted by:

- staying out of the sun
- providing shade or umbrellas over the area
- rehydrating regularly
- in extreme heat using fans and/or water misting to create cooler micro-climates

Prevention Indoors can be assisted by:

- increasing ventilation and air flow
- decreasing air and water temperature
- cycling the temperature up and down over a 24 hours period and matching facility usage

FAT3.2 Hypothermia

Hypothermia is the lowering of the core body temperature. In a swimming sense, this is usually due to immersion in cold water for an extended time, though the colder the water and the younger or smaller the Child, the shorter the period required for the onset of symptoms.
A reduction in only two degrees of the body's core temperature may be enough to cause:

- lethargy and lack of concentration (especially in young children)
- mild to severe shivering (may not be apparent in young children)
- the hands to become numb
- goose-bumps
- reduction in muscle function e.g. cannot get the thumb to touch the little finger

A two to four degree reduction in body temperature usually results in:

- violent shivering
- difficulty in talking
- unfocused thinking
- irrational behaviour
- decreased pulse and respiration
- lips, ears, toes and fingers turning blue (cyanosis)

A temperature loss of more than four degrees usually results in:

- shivering stopping
- amnesia
- inability to use limbs
- incoherent and irrational behaviour
- metabolism slowing leading to organ failure and then death

To treat hypothermia it is important to understand that rapid heating will actually make the condition worse by causing cold blood from the limbs to rush back to the body core.

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Treatment should consist of:

- removal from the water
- drying the person, especially the head
- sheltering from the elements
- wrapping the person in warm blankets and sharing body heat (a hypothermic person is not capable of re heating oneself. Do not rub the person). A warm (not hot) shower is also an alternative option if available
- drinking warm (not hot) sweet drinks
- hospitalization for severe hypothermic patients

Obviously, prevention by not entering cold water in the first place or reducing the immersion time is the best option.

For participants in aquatic programs, the following can offer some assistance:

- keep the head out of the water and dry for as long as possible
- wear a bathing cap to reduce heat losses
- stay down in the water to reduce wind chill
- place wind barriers to deflect the wind over the pool
- wear any form of thermal retentive clothing. This can range from commercially available thin thermal wet suits to firm fitting wet shirts, snug water nappies or even warm clothing - remember many people drown in clothes so learners need to acquire skills whilst clothed

Class strategies to counter cold water include:

- conducting some theory before entering the water on such topics as "Factors that lead to drowning in home environments"; "How parents and carers can reduce the drowning risk to their Child"; "Strategies to enhance water skill acquisition at home" etc.
- splitting the class group in two and conduct two half lessons with half the number of learners in each group.
- conducting the lesson near where the warm water inlets in the pool area or in the less windy/more sunny areas of the pool.
- Ensuring class participants exit and dry their head and then their body as quick as possible to reduce heat loss.

In short, do not attempt the 'standard' in-water lesson period of 30 minutes.

Ultimately, Teachers need to monitor a student in the water when there is a potential for the participant to get cold and allow participants to exit when the signs are obvious that they are:

- showing signs of being cold such as shivering, cyanosis (blue) around the lips or lethargy
- not enjoying the experience
- no longer participating in activities

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University of Portsmouth, United Kingdom & Survival Systems Ltd. Dartmouth, Nova Scotia

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Detailed template policies are available to Swim Australia registered Swim Schools that support the implementation of the ASCTA Policy outlined in this document. For further information on this ASCTA policy contact ASCTA.
For a copy of the template policies, refer to Swim Australia's ™ Human Resource Manual.

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