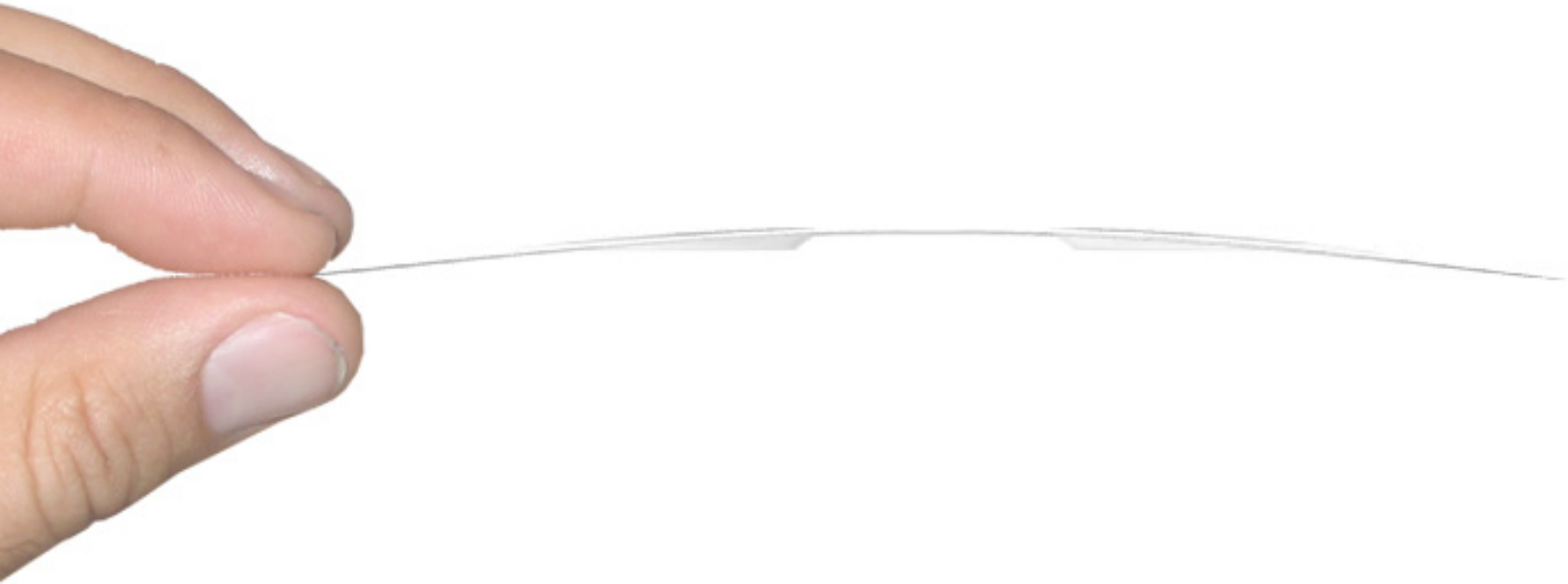


bays.i.c.s
bays international creative solutions

simply innovate!

thin



the lightest, fastest, most hydrodynamic goggle ever made.....we just call it thin

The THIN Goggle



The THIN Goggle is the lightest goggle in the world, it's the thinnest goggle it's the most hydrodynamic goggle in the world, it's the most comfortable goggle in the world, what that means to an athlete is the Gold medal or no medal.....
What do your athletes deserve?

- Hydrodynamic Eyewear

PROJECT BACKGROUND

Why is Eyewear in Swim Category important for the 2016 Olympics?

- Eyewear represents a technical field where there is still scope to deliver real visual innovation, while still respecting the regulations of Fina.
- The athletes want innovation they are looking for the product that deliver them that 100th sec faster speed and make the difference.
- There is scope to improve the Swim goggle. Technologies have moved but swimming goggles are still stuck in the world of the “frog eye” lens and the large nose strap and the head strap which cause huge amounts of drag and effectively slow the athlete down.

- Hydrodynamic Eyewear

PRODUCT INNOVATION – What kind of brand are you?

- Some brands talk about innovation, they like innovation but because they don't really have innovation they make up marketing stories to create hype around what is really not innovation.
- Some brands really are interested in innovation and want to bring innovation to their brand. They are willing to invest in bringing innovation to their brand because they know this advances their brand in the eyes of the consumer and of the athletes who use their brand in competition. True product innovation makes brands great.
- What kind of brand are you?

•Hydrodynamic Eyewear

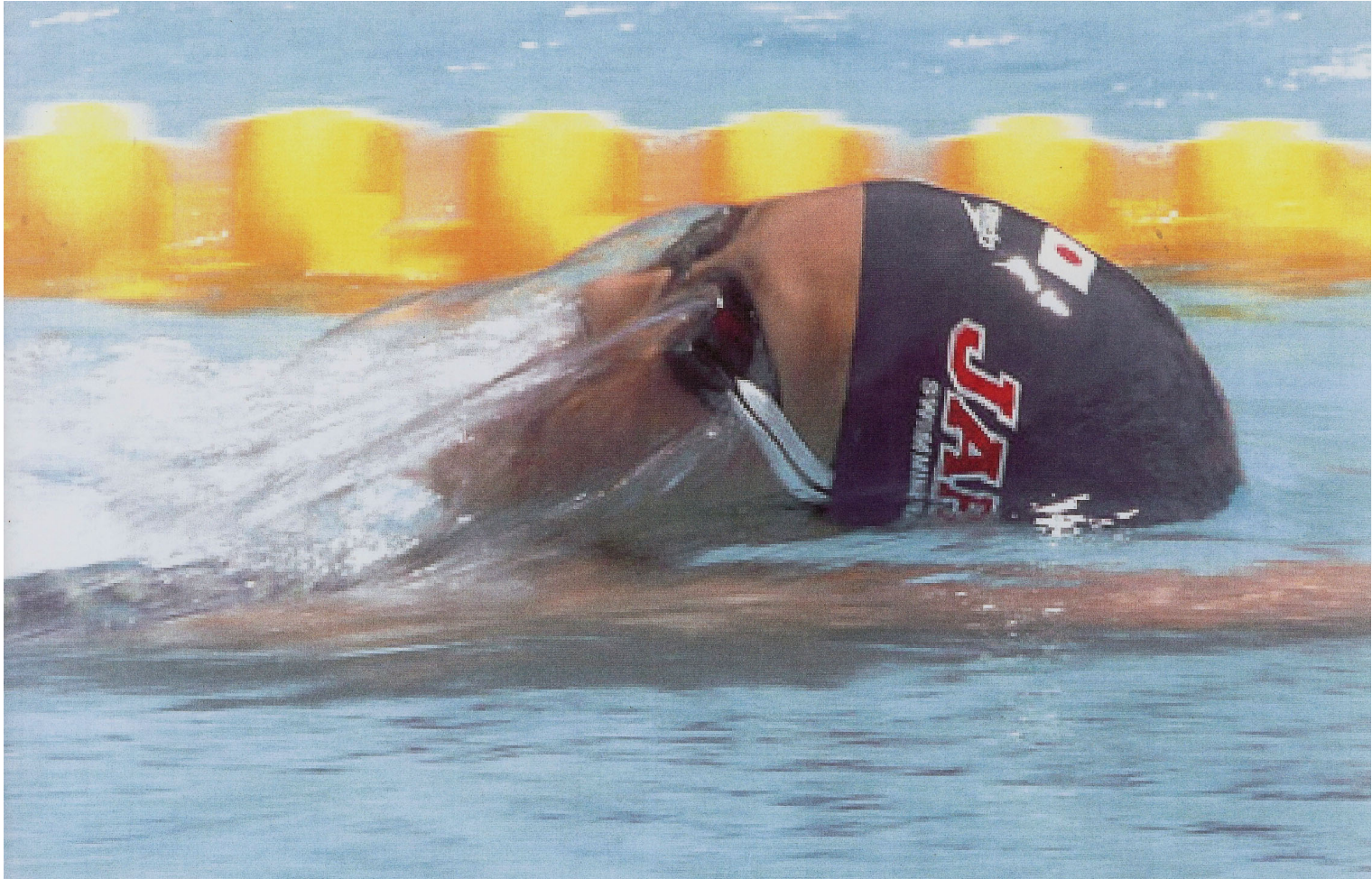
BACKGROUND FOR THE PROJECT

Conventional swim goggles typically include a pair of spaced-apart eyepieces that are worn over the eyes, a nose band that extends over the nose, and an elastic strap that extends around the rear of the head. Such goggles typically surround the orbit (eye socket) to protect the eye and improve underwater vision by providing a corneal/air interface instead of exposing the cornea directly to an aqueous environment.

Two primary design considerations that drive the design of swim goggles **minimizing hydrodynamic drag** and **minimizing visual distortion**.

Hydrodynamic drag creates resistance to the swimmer's forward movement through the water, thereby reducing the swimmer's velocity through the water. Therefore, in order to maximize their velocity when racing or otherwise moving through the water, swimmers need to reduce water resistance or hydrodynamic drag as much as possible. Reducing hydrodynamic drag is of particular importance in sprinting events, such as the 100-meter freestyle, where time differences between swimmers are frequently measured in fractions of a second.

- Hydrodynamic Eyewear



Hydrodynamic drag created by the swimmers goggle

•Hydrodynamic Eyewear

EXISTING SOLUTIONS DEVELOPED TO SOLVE THE PROBLEM

- **To reduce hydrodynamic drag, it is known to increase the curvature of the lenses.** water can flow more easily over the lenses with less resistance. Unfortunately, such lenses tend to distort an image transmitted to the eye, and many users are unwilling to sacrifice visual clarity for reduced drag.
- **Strapless goggles using adhesive tape to fit each eye piece individually.** The disadvantage of such eyepieces is that they are individually located into the orbital socket of each eye and therefore when moving through water the two lens are potentially out of alignment and are not fixed onto a surface with a hard structure such as bone therefore requiring the swimmer to retain the eyepieces in place by contracting the orbicularis oculi muscles (the muscles surrounding the eye sockets) against the frame portions. They are also not as hydrodynamic due to the single lens fits into the eye socket area.
- **Strapless goggles utilising a flat single lens which is fixed to the users face by means of adhesive tape** however these flat lens when fixed onto the users face curve around the users face therefore creating a high level of optical distortion as the part of the lens directly in front of the line of sight of the user is not flat or perpendicular to the line of sight of the user

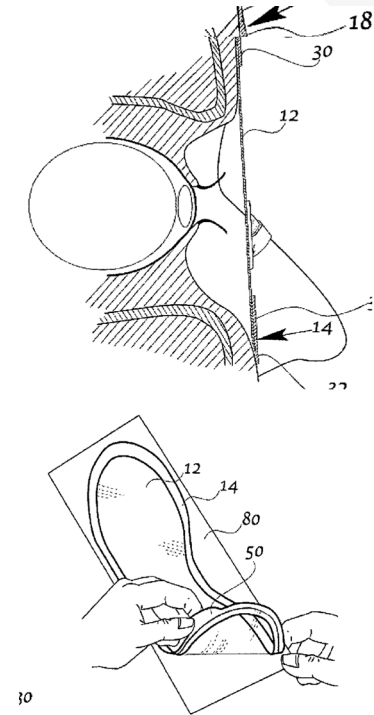
•Hydrodynamic Eyewear



Rounded lens



Strapless lens (1)



Strapless lens (2)

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Fina Regulations

3.3. Goggles

The following criteria apply:

3.3.1. Design

- Independent item: the goggles shall not be attached to the cap nor be in continuity therewith (no "mask" effect)

3.3.2. Material/construction:

- Health. The material used or the construction must not put the health of the athletes at risk nor create a risk of injury.
- Safety standards and functionality: the goggles shall comply with prevailing safety standards for eyewear. Goggles have the function to protect the eyes against water and ensure visibility. Their design or construction shall serve these functions and especially shall not seek to obtain aquadynamic advantages (e.g. through extended shapes not related to the above functions).

- Hydrodynamic Eyewear

Proposed Solution

While fully respecting the rules of FINA that is to say developing a goggle who's key aim is to “protect the eyes against water and ensure visibility”, the new proposal in addition offers superior comfort to the user and as a by-product of this dramatically improves the hydrodynamics of the swim goggle.

ABSTRACT

A Swim goggle which comprises a lens with flexible, semi rigid and rigid portions offering improved clarity of vision and reduced optical distortion characteristics and excellent hydrodynamic characteristics combined with a sealing portion.

•Hydrodynamic Eyewear

Do Strapless goggles reduce drag?

To determine hydrodynamic drag, 3 pairs each of goggles were placed on the head of a life-size mannequin positioned in a tow tank. The mannequin was positioned face down with the arms extended and pointed forward.

Drag measurements for each pair of goggles were recorded at water velocities of 1.950 m/s, 2.025 m/s, 2.1 m/s, 2.175 m/s and 2.250 m/s. The recorded drag measurements were normalized through conversion to non-dimensional drag coefficients. Statistical regression was used to convert the drag coefficients to estimated drag at a velocity of 2.10 m/s

In independent tests the strapless goggles actually reduced the overall drag of the bare mannequin by about 0.073 kg.

This reduction is a consequence of the eyepieces fairing the eye sockets of the mannequin. The difference in drag between the strapless goggles and goggles A is 0.339 kg, and the difference in drag between the strapless goggles and goggles B is 0.481 kg

- Hydrodynamic Eyewear

Do Strapless goggles reduce drag?

In the 100-m freestyle, the differences in drag would result in about a 0.678-seconds advantage over goggles A and about a 0.962-second advantage over goggles B.

Type of Goggles A (commercially available racing goggles)

Goggles B (commercially available Swedish goggles)

TABLE 1

Estimated Difference Drag (kg) from bare @ 2.1 mannequin mls (kg)

9,934 N/A

9,861 -0,073

10,200 +0,266

10,342 +0.408

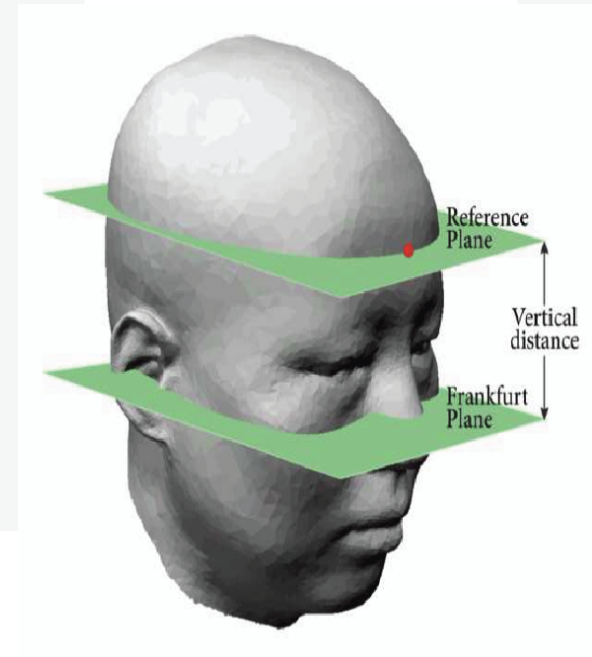
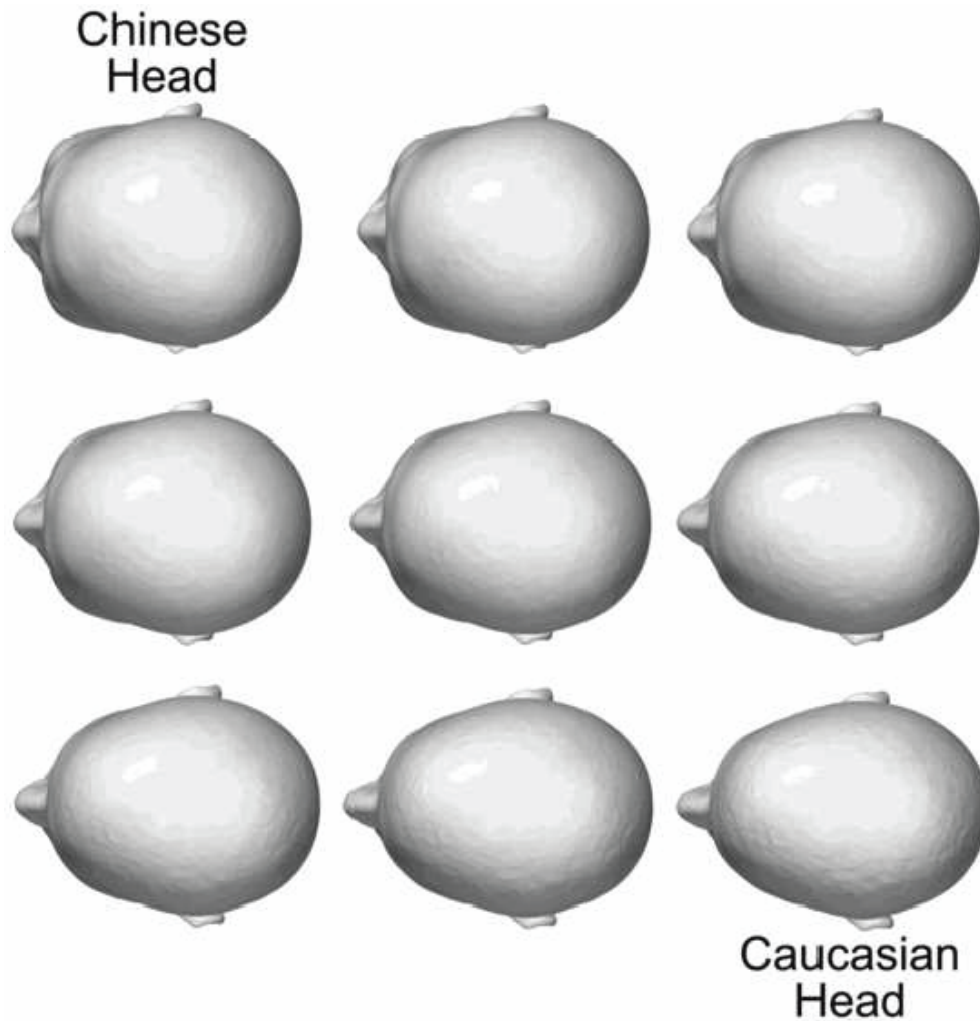
Estimated time savings (-) or addition (+) in the 100-m freestyle N/A

-0.146 seconds

+0.532 seconds

+0,816 seconds

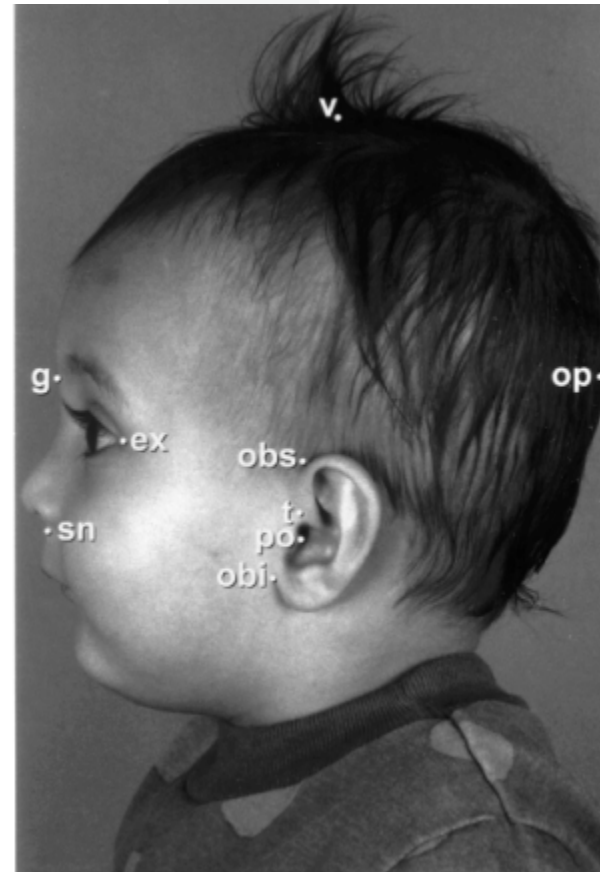
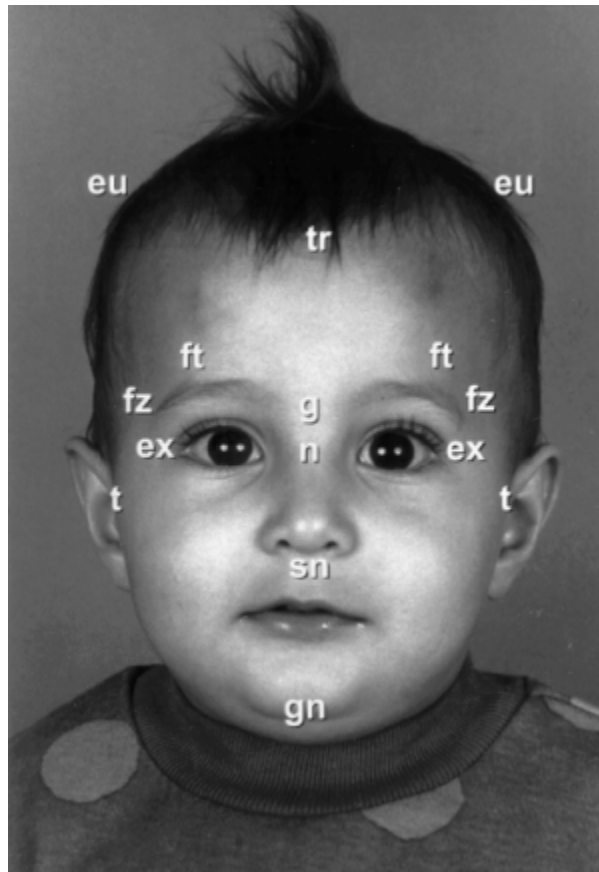
- Craniofacial Anthropometry



The differing shapes of the head represents a particular challenge when developing The hydrodynamic eyewear

- Cranofacial Anthropometry

Relevant zone for goggle development with particular importance in fitting
The main zone of relevance is the frontotemporale, frontozygomaticus, glabella and nasion in particular the depth between the nasion and medial canthus.



- Key advantages of thin goggle over the competition

This traditional “racing” goggle pushes water away and causes huge drag. Just like the spoon in the experiment, if the water is pushed back and has to move around the goggle it slows the swimmer down and that's a fact.

For an Olympic athlete it means it can slow you down by as much as 0.7 seconds over 100 metres.

To put that in perspective: That is the difference between a Gold medal at the Olympic games and No medal. Now that is a big difference!

Strapless lens with rigid portions combined with a sealing portion

- Key advantages of thin goggle over the competition

We believe the new goggle from BAYS.I.C.S is the most advanced goggle in the world. why?

- 1. It is very flat and follows the line of the forehead to the cheek bone.**
- 2. The flat areas in front of the eye give perfect vision.**
- 3. The goggle uses medical grade tape to fix the lens firmly to the swimmers face during any length of race.**
- 4. Weighing less than 3 grams It is incredibly light - that is literally as light as a feather. Remember carrying extra weight slow**
- 5. We use medical grade tape specifically developed to be applied to the human skin.**
- 6. The tape sticks extremely well to the Human Skin and is waterproof.**
- 7. The flexible lens offers incredible vision both in the water and above the water.**
- 8. The antifog coating on the lens ensures a clear vision.**

Strapless lens with rigid portions combined with a sealing portion

Key advantages of thin goggle over the competition

Its also the most advanced goggle because of features it does NOT have. Why?

- 1. There is no lens that sticks out to slow you down.**
- 2. There is no nose bridge sticking out to slow you down.**
- 3. There is no headstrap sticking out to slow you down.**
- 4. It is a very comfortable goggle because there is no pressure needed from straps to keep the goggle in place.**
- 5. There is no chance it can be knocked off in open water events**

The “thin” goggle from BAYS.I.C.S will probably be the smallest and lightest piece of high performance equipment at the upcoming Olympic games.

This “small” piece of equipment will probably make the biggest difference in performance to any athlete in the Olympic games.

We are very proud of this product because we developed this product fully respecting the rules of the game. It's available for all athletes to use we wish them the very best!