

SONRÍE. A fun way to improve facial expression

Platform that integrates different games that allow rehabilitation of facial muscles in children with Infantile Cerebral Palsy (ICP)

A multidisciplinary team of researchers from the Technical University of Madrid and the Rey Juan Carlos University has developed SONRÍE, an effective, complete and usable therapy system.

SONRÍE is formed by a set of four games that allow therapeutic improvement of the orofacial musculature in children diagnosed with ICP and aged between 4 and 12 years. SONRÍE uses a 360 Kinect sensor to stimulate four facial gestures: raising both eyebrows, blowing, kissing and smiling. This sensor provides a more accurate detection of said facial gestures and a therapeutic improvement in facial movement and facial expression.

Technology solution supported by the Technical University of Madrid

Technology solution

SONRÍE is a Kinect therapeutic support system for children with Infantile Cerebral Palsy (ICP).

Using a 360 Kinect sensor, a series of games have been created to detect different facial gestures -raising both eyebrows, blowing, kissing and smiling- achieving greater accuracy in detecting and a better therapeutic improvement of facial movements and facial expressions.

It is essential that these facial rehabilitation exercises are carried out since they will improve the correct execution of the face movement. Besides, repeating these exercises allows building learning and new brain patterns of movement.

"SMILES is conceived to help rehabilitators, physiotherapists and speech therapists to detect and rehabilitate the facial disorders of children with neurological disorders"



SONRÍE games: (1) raising both eyebrows, (2) kissing, (3) smiling y (4) blowing

Areas of application

▪ **ICT applied to Health Sector:** children with Infantile Cerebral Palsy rehabilitation.

Market demands

▪ Health

- Infantile Cerebral Palsy is a brain condition characterized by a persistent but not unchangeable tone, posture and movement disorder.
- The different conditions experienced by children with cerebral palsy make it difficult, and sometimes impossible, for them to do multiple daily activities such as dressing, personal grooming, eating, going to school or even walking or talking.
- In order to make possible this children talking, gesticulating and even feeding properly it is critical to perform facial exercises rehabilitation.



“Medicine and rehabilitation treatments are increasingly using new technologies as they allow building more attractive solutions for patients who will benefit from them”

Market potential

- The incidence of Infantile Cerebral Palsy occurring is from 2 to 3 in 1000 births. However, this number is increasing due to an increase in new cases and in life expectancy of those affected.
- This rate rises to between 40 to 100 of every 1,000 births among babies born very preterm or very low birth weight.
- This rate is similar in both the developing and developed countries.
- The incidence rate is higher in men than in women; for example, in Europe it is 1.3 times more common in males

Competitive advantages

- SMILES stimulates four facial gestures: raising both eyebrows, blowing, kissing and smiling.
- Games are conceived to explore first and then work with the muscles responsible for each of the gestures, so that a therapeutic improvement in facial movements performed is achieved.
- Repetition leads to achieve new learning and new brain patterns of movement.
- The child is an active part of the process, which helps to improve self-esteem and personal satisfaction.
- Adaptable to other pathologies affecting the tone and muscle control, such as Down syndrome, Moebius syndrome, or dystrophies.
- Extrapolated to adults with facial palsy, amyotrophic lateral sclerosis, head trauma or stroke with facial affection.

References

- The UPM research group T> SIC has extensive experience in accessible information systems and networks and telematic services for e-health.
- SONRÍE has been validated in 10 children with cerebral palsy and 7 children with normative development.

IPR

- Software registration M-7316/2015

Development stage

- | | |
|-------------------------------------|---|
| <input type="radio"/> Concept | <input checked="" type="radio"/> Industrial Prototype |
| <input type="radio"/> R & D | <input type="radio"/> Production |
| <input type="radio"/> Lab Prototype | |

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