

# GAME INTERACTION BETWEEN A HUMANOID ROBOT AND A DIABETIC TEENAGER MIGHT THIS IMPROVE MOTIVATION TO FILL IN THE NUTRITIONAL DIARY?

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## Introduction

### about the study

THIS STUDY DESCRIBES THE EXPERIENCE OF INTRODUCING **NAO**, A HUMANOID ROBOT, INTO A SUMMER CAMP FOR CHILDREN WITH DIABETES (August 2013, Misano Adriatico, Italy), WITH THE AIM TO PROVIDE A COMPANION CAPABLE OF SUPPORTING AND MOTIVATING THEM.

### our goal

to investigate whether Nao's interactions with children could positively affect the adherence to specific medical recommendations during their stay.

Namely, children were asked to fill in a specific nutritional diary.



### Aliz-e project

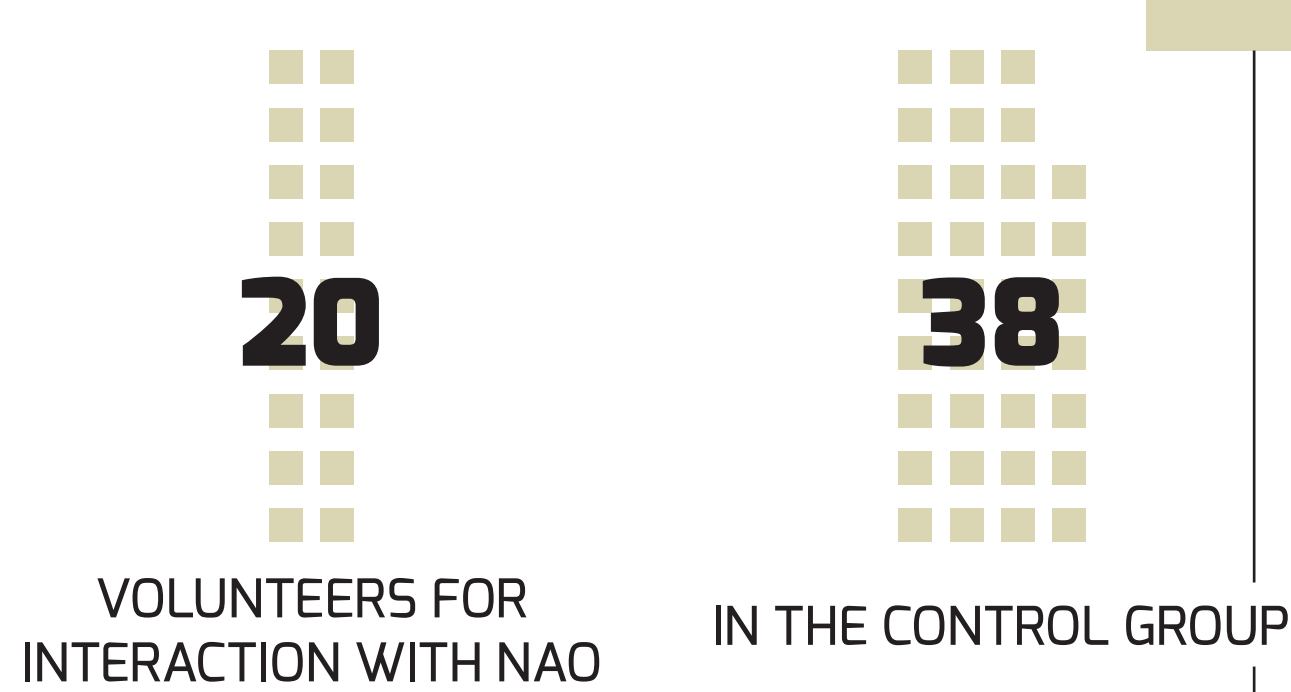
This activity was carried out in the context of the ALIZ-E EU co-funded project, which develops the *theory* and the *practice* behind the development of embodied cognitive robots capable of long-term interaction with child.

## Methods

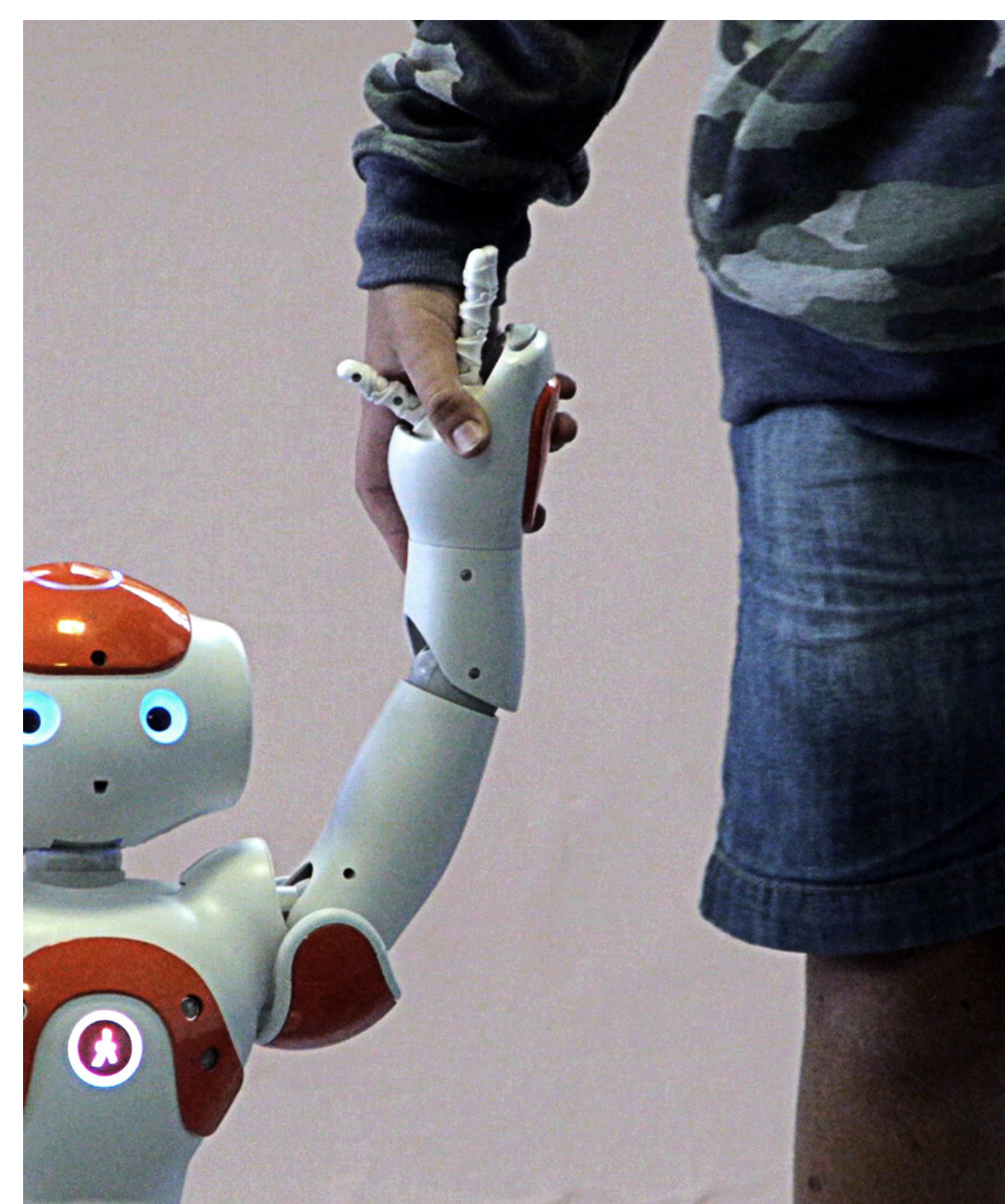
### participants

age range ..... 11-14 years old

n. of children involved ..... 58



**GOOD GLICOMETABOLIC CONTROL**  
of all children  
HBA1C M 7,2%, DS 0,93



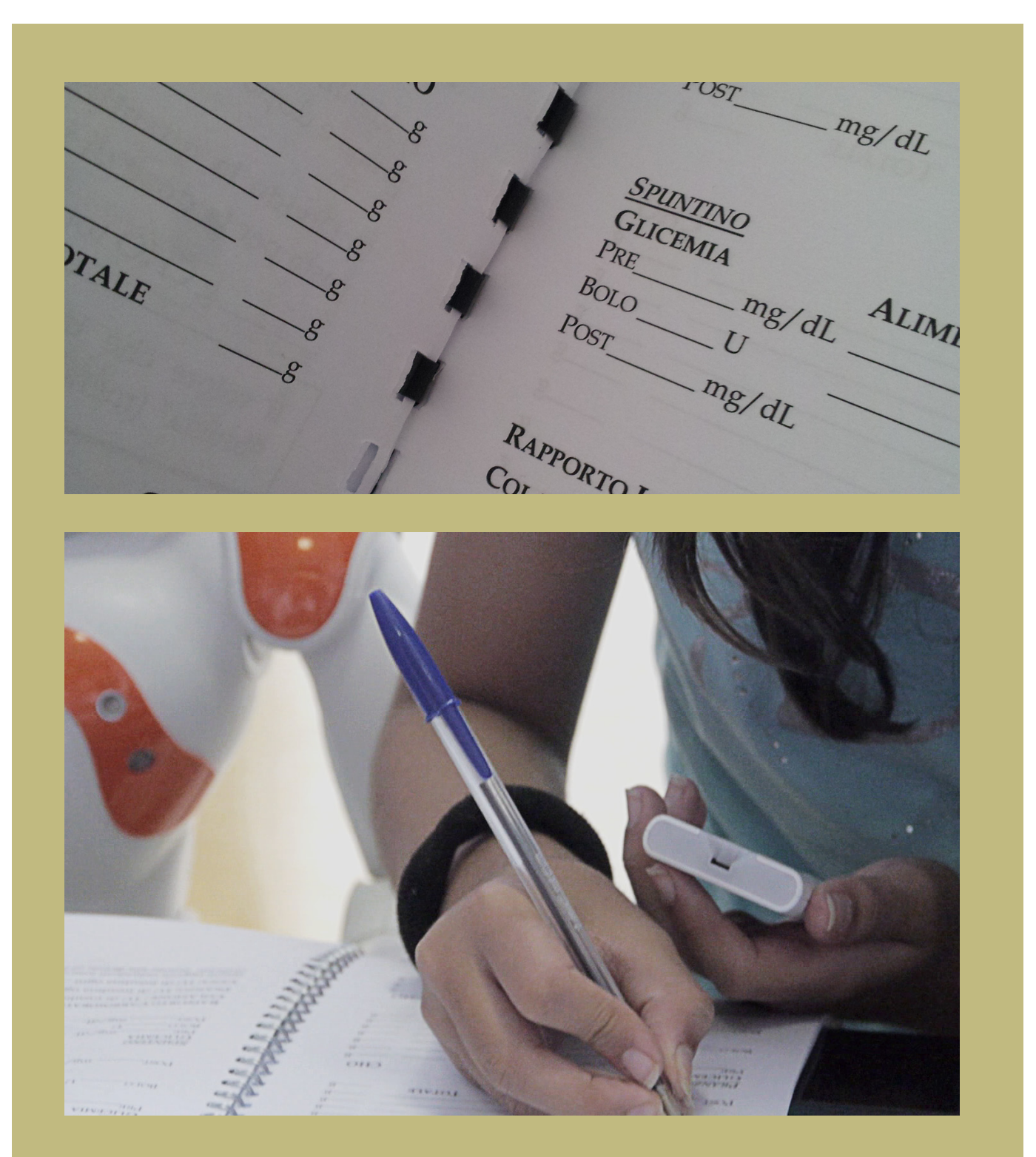
### content & evaluation

During the interaction, the child and the robot played different activities related to nutrition and diabetes.

Meanwhile Nao provided motivational hints regarding the nutritional diary, underlining the importance of filling it in.<sup>1</sup>

Finally, adherence of diabetic children to this task was measured by evaluating whether the child, after the interaction, filled in the diary at least once during the following days.

<sup>1</sup> Kruijff-Korbayova et al. Effects of Off-Activity Talk in Human-Robot Interaction with Diabetic Children. In *Ro-Man 2014: The 23rd IEEE International Symposium on Robot and Human Interactive Communication*.



## Results

PLAYED WITH NAO	FILLED IN DIARY		total
	YES	NO	
YES	8	12	20
NO	4	34	38
total	12	46	58

A two-tailed t test comparing the two means confirmed statistical significance ( $t=2.39$  with  $p=0.0103$ ).

double the number of children who didn't play with Nao filled in the diary



## Conclusions

the study revealed...

### BETTER ADHERENCE TO FILL IN THE DIARY

thanks to individual child-robot interactions compared to the control group

### EFFICACY OF THIS USEFUL AND ENJOYABLE WAY TO MOTIVATE DIABETIC CHILDREN

## Future Perspectives

### LONG-TERM EFFECT

Our aim is to keep on exploring the theme of motivation through this methodology, in particular its long-term effect.

During Summer Camp 2014 (Misano Adriatico, Italy) we will investigate the motivation and its effect on children's daily life

### MEDICAL CONTEXT

This preliminary work opens the possibility to introduce an innovative and enjoyable tool into

the hospital context, as a support to medical staff work.

#### ACKNOWLEDGEMENTS

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