A uirtual Reality program to enhance performance and emotional control in professional athletes



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Abstract

It has been shown that people tend to have realistic emotional and behavioural reactions to situations experienced in Virtual Reality. In our study, we present a Virtual Reality program which recreates a situation of high-performance expectation for professional rugby players. We show different visual and auditory parameters aimed at inducing different levels of stress in the participants immersed in the Virtual Reality scenario. We believe that an exposure of athletes to highly realistic stressful situations in Virtual Reality could help them to be better prepared for facing similar emotions when being with their team on the rugby field.

Aim of the study

- Create a virtual environment displaying the key elements that can affect performance in a real game situation
- Allow the athletes to choose which parameters of the

Research Question

After a failure, which parameter of the environment will the athletes want to modify in priority in order to increase their performance?

virtual environment they want to modify in order to increase their performance

• Raise the awareness of the athletes on those parameters in order to increase their emotional control in the situation of a game

Uirtual Environment



Fig. 1: Virtual Environment of the professional rugby stadium

Hypothesis

We believe the elements related to social feedback (teammates and supporters) will be prioritized by the professional athletes in order to decrease their level of stress in the situation of a motor task related to high levels of pressure

Motor Task



Fig. 2 Place Kick

Fig. 3 : Virtual Body of the participant attempting to kick at the goal



Fig. 4 : Here the participant chose to change parameter 1 : presence of teamates

Experimental procedure

- The Virtual environment (Fig.1) is displayed in an HTC Vive HMD (night and rain on the stadium)
- The arms and legs movements of the participants are tracked with HTC Vive trackers
- Participants have to perform the task of kicking at the goal (Fig.2 and Fig.3)
- Just before kicking, participants are asked to rate their level of stress (scale from 1 to 7)
- The goal is missed and the participants have to rate again their stress level (scale from 1 to 7)
- Participants can choose to modify one parameter choosing between these four :
 - 1: Presence of other avatars on the field (Teammates) Fig. 4
 - 2 : Positive social feedback: auditory effect of the supporters singing and applauding
 - 3 : Modification of the climate (stop the rain)
 - 4 : Modification of the light condition (from night to daylight)
- Participants are again in the situation of kicking at the ball (Fig.3) and have to rate their stress level (scale 1 to 7)

Expected Results

- Stress level of participants will increase with the failure at kicking at the goal
- Stress level of participants will decrease with the modification of their chosen parameter

• We expect presence of teammates and positive feedback from supporters to be the most chosen parameters across participants

Discussion and Application

- This application will allow the professional rugby players to be aware of the elements that can help them in the situation of performing a stressful motor task
- When confronted to a stressful situation on the field, they will be able to focus on one aspect of their surrounding environment that can help them cope with the stress (as they chose to change one parameter of the Virtual Environment)
- We believe that this application can increase the adaptability of the professional Rugby Players to the unstable environment of a game and help them to be aware of the elements that can decrease their level of stress on the field

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