Drachen, Anders, et al. "Correlation between heart rate, electrodermal activity and player experience in first-person shooter games." ***Proceedings of the 5th ACM SIGGRAPH Symposium on Video Games*****. 2010.**

Psychophysiological methods are becoming more popular in game research as covert and reliable measures of affective player experience, emotions, and cognition. Since player experience is not well understood, correlations between self-reports from players and psychophysiological data may provide a quantitative understanding of this experience. Measurements of electrodermal activity (EDA) and heart rate (HR) allow making inferences about player arousal (i.e., excitement) and are easy to deploy. This paper reports a case study on HR and EDA correlations with subjective gameplay experience, testing the feasibility of these measures in commercial game development contexts.

Three major commercial First Person Shooter (FPS) games were used as it is the most popular contemporary genre of digital games and action gameplay forms a key part of the player experience. Participants were asked to fill out an In-Game Experience Questionnaire (iGEQ). It contains 14 items all rated on a Likert scale distributed in pairs between seven dimensions of player experience: immersion, flow, competence, tension, challenge, negative effect, positive effect.

Quantitative tools used were Heart Rate (HR monitor) and Electrodermal activity (EDA) (bio sensor). The results indicated that there is a significant correlation ($p < 0.01$) between psychophysiological arousal (i.e., HR, EDA) and self-reported gameplay experience. HR correlates negatively with the iGEQ dimensions of Competence, Immersion, Flow, Challenge, and Positive Affect but positively with Tension and Negative effect. High HR correlates with feeling tense and frustrated.

In the experiment, it was found that EDA correlates with the negative affect(frustration). However, there is no significant correlation with the Challenge dimension of the iGEQ survey.

I think the tools/techniques used in this study are very relevant to our project. However, the questionnaires and the tools used can be altered to meet some of our requirements which are more prevalent in art performances. The challenge aspect seems to be somewhat relevant but not as relevant as it was for the gaming experience. Since this study shows some of the correlations, we can use them to understand and build our own results while conducting questionnaires.