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Assessing the Physiological Cost and Intrinsic Motivation of Multiplayer versus Single Player Active Videogames in Young Healthy Males

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Introduction

➢ Almost one third of 2 to 15 year olds are overweight in the UK [¹].
➢ Within the UK, video games are played for over 12 hours per week [²].
➢ Active videogames (AVGs) may have the potential to be used to increase physical activity levels of individuals, used in combination with other sources of activity [³].

Aims

1) To assess the physiological cost of AVGs in a multiplayer mode, in comparison to single player.
2) To assess intrinsic motivation of participants during each game mode.

Method

Single Player N=19
(age, 23 ± 3 years; stature, 178 ± 6 cm; body mass, 79 ± 15 kg)

Multiplayer N=18
(age, 24 ± 5 years; stature, 180 ± 7 cm; body mass, 81 ± 13 kg)

Heart rate (HR) and oxygen uptake (VO₂) recorded continuously.
RPE taken every 3 minutes.
Energy Expenditure (METs) calculated.
Flow State Scale (FSS) administered after each game mode.

Results

Table 1. Average physiological and subjective data for AVGs between single (N=19) and multiplayer (N=18) gaming

<table>
<thead>
<tr>
<th></th>
<th>RPE</th>
<th>HRmax (%)</th>
<th>VO₂max (%)</th>
<th>METs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Player</td>
<td>12 ± 1</td>
<td>68 ± 9</td>
<td>49 ± 12</td>
<td>7 ± 2</td>
</tr>
<tr>
<td>Multiplayer</td>
<td>11 ± 2**</td>
<td>62 ± 8**</td>
<td>41 ± 13**</td>
<td>6 ± 1**</td>
</tr>
</tbody>
</table>

* p≤0.05, ** p≤0.01

Conclusion

➢ During AVGs, participants displayed greater motivation whilst playing with a human opponent.
➢ Despite greater motivation during multiplayer gaming, single player gaming showed significantly greater physiological and cardiorespiratory responses.

References


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